Association For Education of the Visually Handicapped

Forty-Ninth Biennial Conference

JUNE 1968

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1968

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Association for Education of the Visually Handicapped

1604 Spruce Street
Philadelphia, Pennsylvania 19103

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ASSOCIATION FOR EDUCATION OF THE VISUALLY HANDICAPPED

First known as the Instructors of the Blind, and later as the American Association of Instructors of the Blind, AEVH began in 1853 with a national meeting of superintendents of the sixteen residential schools for the blind. Conventions have been held biennially except those years when national emergencies prevented. The name of the organization was changed, at the 1968 convention, to Association for Education of the Visually Handicapped.

In 1952 the Workshop method of national conventions was adopted and the membership was opened to all who were interested in improving the educational opportunities of all visually handicapped children. In the Workshops, educators are able to define problems and work actively toward their solutions. Workshops elect officers and work continues between conventions by mail and through regional meetings. Student chapters may be formed at colleges and universities where a number of interested persons are training for work with visually handicapped children.

AEVH publishes a newsletter called the FOUNTAINHEAD, its conference proceedings, and provides the professional journal, EDUCATION OF THE VISUALLY HANDICAPPED for its members. The organization also participates actively in teacher and houseparent certification, training institutes, the development of special standards, the encouragement and report of research in the field, and cooperation with national and international agencies and organizations interested in the education of visually handicapped children and youth.

AEVH is affiliated with The Council For Exceptional Children, a Department of the National Education Association.

For further information, write AEVH Executive Secretary,
1604 Spruce Street, Philadelphia, Pennsylvania 19103.

MEETINGS

The following is a list of the conventions of the American Instructors of the Blind (1853-1871) and the American Association of Instructors of the Blind (1872-1966):

1st Meeting: August 16-18, 1853 at New York, New York
2nd Meeting: August 8-10, 1871 at Indianapolis, Indiana
3rd Meeting: August 20-22, 1872 at Boston, Massachusetts
4th Meeting: August 18-20, 1874 at Batavia, New York
5th Meeting: August 15-17, 1876 at Philadelphia, Pennsylvania
6th Meeting: August 21-23, 1878 at Columbus, Ohio
7th Meeting: August 17-19, 1880 at Louisville, Kentucky
8th Meeting: August 15-17, 1882 at Janesville, Wisconsin
9th Meeting: August 19-21, 1884 at St. Louis, Missouri
10th Meeting: July 6-8, 1886 at New York, New York
11th Meeting: July 10-12, 1888 at Baltimore, Maryland
12th Meeting: July 15-17, 1890 at Jacksonville, Illinois
13th Meeting: July 5-7, 1892 at Brantford, Ontario, Canada
14th Meeting: July 17-19, 1894 at Chautaugua, New York
15th Meeting: July 14-16, 1896 at Pittsburgh, Pennsylvania
16th Meeting: July 12-14, 1898 at Lansing, Michigan
17th Meeting: July 9-11, 1902 at Raleigh, North Carolina
18th Meeting: July 20-22, 1904 at St. Louis, Missouri
19th Meeting: August 21-23, 1906 at Portland, Oregon, at Salem, Oregon and at Vancouver, Washington
20th Meeting: July 14-16, 1908 at Indianapolis, Indiana
21st Meeting: June 28-July 1, 1910 at Little Rock, Arkansas
22nd Meeting: June 25-28, 1912 at Pittsburgh, Pennsylvania
23rd Meeting: June 28-30, 1915 at Berkeley, California
24th Meeting: June 4-7, 1916 at Halifax, Nova Scotia, Canada
25th Meeting: June 24-28, 1918 at Colorado Springs, Colorado
26th Meeting: June 21-25, 1920 at Overlea, Maryland
27th Meeting: June 27-30, 1922 at Austin, Texas
28th Meeting: June 23-27, 1924 at Watertown, Massachusetts
29th Meeting: June 21-25, 1926 at Nashville, Tennessee
30th Meeting: June 25-29, 1928 at Faribault, Minnesota

31st Meeting: June 23-27, 1930 at Vancouver, Washington
32nd Meeting: June 27-July 1, 1932 at New York, New York
33rd Meeting: June 25-28, 1934 at St. Louis, Missouri
34th Meeting: June 22-25, 1936 at Raleigh, North Carolina
35th Meeting: June 27-30, 1938 at Lansing, Michigan
36th Meeting: June 24-28, 1940 at Pittsburgh, Pennsylvania
37th Meeting: June 26-30, 1944 at Little Rock, Arkansas
38th Meeting: June 24-28, 1946 at Watertown, Massachusetts
39th Meeting: June 21-25, 1948 at Austin, Texas
40th Meeting: June 26-30, 1950 at Philadelphia, Pennsylvania
41st Meeting: June 29-July 3, 1952 at Louisville, Kentucky
42nd Meeting: June 27-July 1, 1954 at Batavia, New York
43rd Meeting: June 24-28, 1957 at Worthington, Columbus, Ohio
44th Meeting: June 22-26, 1958 at Vancouver, Washington
45th Meeting: June 26-30, 1960 at Donelson, Tennessee
46th Meeting: June 28-July 2, 1962 at Miami Beach, Florida
47th Meeting: June 21-25, 1964 at Watertown, Massachusetts
48th Meeting: June 26-30, 1966 at Salt Lake City, Utah
49th Meeting: June 23-27, 1968 at Toronto, Ontario, Canada

Copies of Convention Proceedings for many of the above meetings may be purchased by inquiry to the office of the Association for Education of the Visually Handicapped, 1604 Spruce Street, Philadelphia, Pennsylvania 19103

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CONGENITAL RUBELLA - BAYLOR STUDY

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Because of the similarity of the names, a good bit of confusion exists about rubella and rubeola. These are the medical terms for two different diseases which are commonly referred to as measles. Rubeola is characterized by high fever, cough, rhinorrhea, conjunctivitis and generalized rash. It is also called "eight day measles." Rubella is a disease characterized by mild constitutional symptoms, enlargement of lymph nodes, and a generalized rash. Because the rash usually lasts only three days, it is also called "three day measles." It is this latter disease, when it occurs in pregnant females, that can lead to the congenital syndrome to be discussed.

Sir Norman Gregg, an Australian ophthalmologist, first described the association of congenital eye defects, congenital heart disease, deafness and mental retardation with maternal rubella. His report appeared in 1941, and by 1943 it had been firmly established that abnormalities occurred in infants whose mothers had rubella during the early months of pregnancy, usually the first trimester.

Until the epidemic of 1963-65, it was considered that the defects present in these infants were static and represented the effects of a disease that was no longer active. However, as infants born to mothers who had rubella during this epidemic were studied, it became apparent that congenital rubella could be an active and continuing infection after birth.

It has been estimated that 20-30,000 infants were affected by the 1963-65 epidemic. (The mortality rate is approximately 30%. If this estimate is correct, there are 14-21,000 survivors.)

A large number of such infants was born in the Houston area following this epidemic and a study team was organized at Baylor University College of Medicine to investigate these new findings. In January 1965 a special Rubella Follow-up Clinic was set up at Texas Children's Hospital to study and care for these children.

During the next few months, the original syndrome described by Gregg, Swan, and others in the early 40's, was expanded to include a much larger number of findings and became known as the "Expanded Rubella Syndrome." These findings included petechiae or purpura, thrombocytopenia, anemia, enlargement of the liver and spleen, jaundice, pneumonia, encephalitis, bone lesions, skin manifestations, diarrhea, kidney abnormalities, growth retardation, immunologic abnormalities, as well as other apparently lesser anomalies.

The following table summarizes the outcome at 18 months of the first 100 infants with congenital rubella cared for in the Rubella Follow-up Clinic at Texas Children's Hospital:

Congenital Rubella: 18 Month Outcome

Expired	20
Lost to Study	16
Survivors	64
Sensory or neurologic abnormalities	60
No sensory or neurologic abnormalities	4

The types of lesions present in these children were as follows:

Bilateral cataracts	18
Unilateral cataracts	19
Glaucoma	1
Chorioretinitis	20

The results of hearing evaluations of the 64 survivors disclosed that 28% had no detectable hearing loss, 45% had definite loss, and 27% showed poor speech indicating possible hearing problems.

Congenital heart lesions were present in 69 of the 100, but many of these were mild pulmonary branch stenosis, not limiting activity.

As the survivors grew older, the problems changed from those of an acute illness to those of a chronic, handicapping disease. The attention then shifted to proper long term follow-up and the use of prostheses and special training techniques. In Houston, excellent cooperation was obtained from the Houston Speech and Hearing Center, the Cerebral Palsy Treatment Center, the Lighthouse for the Blind, the Houston Council for Retarded Children, and the Houston Child and Family Service Center. These facilities evaluated children with special problems in each of the agencies' fields of special competence. The agency that could offer the most to a particular child enrolled him in its program. In many cases, a child attended sessions in two or more of the institutions. Periodic meetings were held between members of the Rubella Clinic staff and representatives from each of the cooperating agencies to discuss specific children and their problems. Although one agency had primary responsibility for a child's immediate problem, the other agencies were consulted and their recommendations solicited in regard to other problems that the child might have in their special fields of competence. It was realized early that the impact of these children on the family was great, and during this period of time the Child and Family Service Center was holding periodic parent group meetings to discuss the common problems presented by these children to their families. At the same time that the children were attending various programs in these agencies, they were followed periodically in the Rubella Clinic and as rapidly as handicapping lesions were found and the child's physical condition permitted, they were surgically repaired, or prostheses applied. The Texas Health Department was most cooperative in providing hearing aids for most of the children in the Clinic.

During this period it became evident that these children could remain infectious as long as 18 months of age. Virus studies done through the Clinic disclosed that children may shed virus for months and that during this period of time they were infectious and could give rubella to susceptible people. During this period of time it was necessary to isolate these children in each of the agencies and in the Clinic so that they would not expose pregnant or potentially pregnant female workers.

It is obvious that the parents of the children with several or multi-handicaps were continuously on the go. It had long been realized that our plan was not ideal and that it was necessary to centralize the care of the multi-handicapped patients. In the spring and early summer of 1967, when these children were about 2½ years of age, a multidisciplinary examination was conducted by the staff of the Child Development Clinic of Texas Children's Hospital. This examination was conducted by physicians, occupational therapists, physical therapists, psychologists, social workers, public health nurses and speech therapists. A group of 69 children was examined. From this group of 69, 20 children were selected by the multidisciplinary staff as needing a multi-handicap program. Such a program was designed under the direction of Dr. Gloria Cochran, the Associate Director of the Child Development Clinic, and instituted at the Texas Institute of Rehabilitation and Research in October, 1967. These children received attention in the areas of speech training, physical therapy, occupational therapy, physical medicine, psychological evaluation, social service, orthopedics, and other fields as indicated. Weekly staffing sessions are held on these children and a composite decision about the child's progress and needs reached by the group.

Although no two children in the multi-handicap group were exactly alike, the combination of lesions most frequently seen was visual defects due to cataracts, or glaucoma, hearing loss due to neurosensory impairment, and neuro-muscular problems ranging from delayed motor development to cerebral palsy.

Many of the children also had congenital heart disease, but none had a limitation of activity resulting from the heart lesions.

Gesell psychological testing has been done by Dr. Willie Verniaud. Eighty-three children have had Gesell psychological tests at 36 months of age. Others have had only two or one test. The results of these tests, based on performance at 36 months indicate that a large number of the children tested achieved 2/3 expected age (24 months) or above in motor behavior, adaptive behavior and personal-social behavior. It was noted, however, that a smaller portion of the children achieved 2/3 age level in language behavior and in fact, not a single child tested achieved the three year age level. We do not have an explanation for this finding at the present time, but undiagnosed hearing problems would be a good possibility. When the results are expressed as a developmental quotient they indicate that 60 of the 83 children are functioning in a normal or near normal range. Most of the children in the normal or near normal group have only hearing loss. All of the children in the lower developmental quotient ranges have two or more handicaps. Analysis of the lesions present in these 83 children who have reached 3 years of age disclosed the following:

Visual problems	6
Hearing problems	28
Motor	3
Vision and hearing	5
Vision and motor	10
Vision, hearing, and motor	19
Hearing and motor	8
None	4

The latest tabulation of common handicaps present in our Clinic population based on an analysis of 146 patients indicates:

Hearing impairment	70
Visual handicap	39
Motor Handicap	50
Hearing and visual handicaps	20
Normal	17

Some of these children have combined lesions.

In summary, then, congenital rubella can begin as a devastating, acute, life-threatening illness. It can be chronic, presenting problems for the family, the individual patient and the community. It can result in a variety of single and multiple handicaps. In general, however, the course for the majority of congenital rubella patients is one of steady improvement. With early detection, proper medical and surgical care, and early institution of prosthetic devices, habilitation and educational programs, the outlook for these children is far from bleak.

Financial support for the study came from the following public and private agencies: Children's Bureau, U. S. Public Health Service, Farish Fund, John A. Hartford Foundation, Texas Children's Hospital, and Baylor University College of Medicine.

EVALUATION OF MULTI-HANDICAPPED DEAF-BLIND CHILDREN

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The preliminary results of a research project to identify terminological problems in the description of multi-handicapped deaf-blind children were briefly inspected to suggest the need for expanded dialogue between teachers of such children and evaluation center personnel in both medical and behavioral sciences.

The following specific citations were given to indicate the need for observational data which might be translated into behavior modifications and teaching guide lines as opposed to that type of terminology which is descriptive or removed to a level of only inferential relation to behavior.

1. Forty-one per cent of the terms used by the pediatrician are concerned with tests of physical status and health while only 15% relate to behavioral and functional skills.

2. Similarly, 63% of the neurological terminology is concerned with physical status and health and 18% is concerned with functional skills and behavioral characteristics.

3. Seventy-four per cent of the opthalmological terminology describes physical health while only 3% relates to behavior-visual or general.

4. Contrary to the above trends, 61% of the psychological report terminology was concerned with non-psychometric description of the child while only 15% of the terms related to formal psychometric tests.

5. Similarly, 41% of the audiometric terms related to observational judgement while only 32% referred to formal test procedures.

6. With respect to all of the above, it is disturbing that the mean incidence of a given term is in no professional area generally, nor in no category within a professional report as great as four.

7. Although there are numerous other specific areas of concern developed by these data, the above strongly suggested the need for more standardized observational procedures. For example, the two most consistent entries in the psychological report were (1) that the mother was the informant and (2) commentary on toilet training. Surely, other aspects of child description are of equal or greater importance for educational planning.

THE USE AND ABUSE OF THE I.Q.

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When addressing an educational group it is not necessary to define the term Intelligence Quotient, or I.Q. You have been living with the term for all of your educational experience. Many may believe that the expression originated with Alfred Binet, the father of "intelligence" testing. In truth, his tests produced only a "mental age." The Intelligence Quotient was suggested in 1912 by Kuhlman and by Stern, and the concept was adopted by Terman in the 1916 Stanford Revision of the Binet-Simon tests.

Terman's I.Q. was the ratio of mental age to chronological age, later multiplied by the factor of 100 to eliminate the decimal point. Some of the later test producers avoided, or eliminated, the mental age but retained the I.Q. score basing it upon the degree to which the individual's test performance deviated from the average for his age group. In either case, the I.Q. is nothing more, or less, than the numerical score representing an individual's performance on a series of pre-selected tasks that made it possible to compare his attainment with that of other persons of the same age. The tasks were intended to sample intellectual faculties representative of the characteristics involved in the learning process and the resulting I.Q. score was considered to be an index of "general" or "relative" intelligence.

Binet, Terman, and Wechsler, probably the best known producers of intelligence tests, devised their scales for the purpose of classification. Today custom or statute requires that schools classify pupils on the basis of I.Q. In order to classify individuals on the basis of I.Q., it is necessary to assume that the I.Q. is a constant factor; i.e., that the scores of a specific individual on a given test will remain the same through repeated testing at different ages. Another implicit assumption is made that although a given test measures a cluster of different factors the individual performs equally well in the different areas of learning ability. Thus there has evolved through years of usage by educators an unjustified confidence in the ability of the I.Q. to describe an individual's intellectual functioning in a very consistent manner.

It is my intention to illustrate to you that the I.Q. does not describe an individual's mental abilities, and I will demonstrate that an individual's I.Q. does not remain constant. Figure 1 illustrates the manner in which the result of intelligence testing is reported to the teachers and principal of Perkins School for the Blind. The format was devised for use with Wechsler scales in an effort to convey the information provided by the tests. All cases illustrated through Figure 6 are actual and were pulled at random from the file. Figure 1 represents the type of test performance needed if we are to consider the I.Q. as an index of general intelligence. Unfortunately it is the only record of this type in our file on our current student population. It is indeed a rare record.

Figure 2 presents an interesting record. According to the I.Q. of 121 one would expect that the boy possessed superior learning ability. Yet the record shows that his reasoning ability is merely average and that his higher score reflected very superior memory facility. Figures 3 and 4 illustrate very different patterns of learning characteristics with identical and distorted I.Q.'s. The distortions occur because of very superior rote memory, a frequent occurrence among the blind as Hayes, Tillingham and others have reported. The girl reported on Figure 3 is more properly described as possessing average learning ability instead of an I.Q. indication of superior intelligence. The boy in Figure 4 has an interesting scatter from the dull normal to the very superior level. He is more properly a bright normal child who probably has had very limited social experience.

Figure 5 reports a dull normal I.Q. distorted from the borderline level of learning by good rote memory facility. Figure 6 illustrates a spread of function ranging from dull normal to superior that is vastly different from the average I.Q. of 106.

I hope that these figures have described satisfactorily how inadequately the I.Q. describes the performance of an individual on a test of "general" intelligence. While statute may require its use and while an argument may be made for its use in comparing groups of subjects or individuals within groups, the I.Q. does not describe adequately the learning abilities of individuals.

Figure 7 is presented to show that the I.Q. is not constant, in fact the concept has been rejected by many psychologists and educators for many years. The first four cases were selected randomly and they indicate consistent growth of demonstrated ability to learn. As a point of interest, two of the cases are R.L.F.'s and two are blind due to other causes. Case 4 seems to have dropped in performance at age fifteen. However, during that period she was pre-occupied by being the target of a conflict between divorced parents. Following a brief period of supportive therapy she resumed functioning as well as she had earlier.

Case 5 is most interesting because it is a boy who came to Perkins from a state school for the mentally deficient. The first test was administered prior to admission to Perkins by the author. The second test was administered during his third year at the school. This older boy is an omniverous reader with a fantastic memory for meaningful material. Thus he was able to score high using stereotyped responses. Yet he is almost completely incapable of performing verbal reasoning tasks. In this case the I.Q. did not remain constant, but the subject's abilities remained relatively so.

Case 6 is an illustration of deterioration of mental functioning as a result of non-organic factors. This young person lives in a very neurotic household that has grown progressively more unstable with steadily increasing conflict. As a consequence the girl's ability to focus her intellectual talents has decreased in proportion to the increasing disorganization in her home.

In addition to presenting the limitations, the possible inaccuracies and the lack of constancy of the I.Q., the author hopes that these final cases have convinced you of the need for repeated testing in schools and the need for narrative descriptions of testing situations. With only the numerical data in front of you you would not know why the data of cases 4 through 6 look so unusual.

Name	Age	Test	Test Date	IQ
BOY	13-10	W	2/13/68	116

	Meanful Memory	Soc Prob Solving	Non Mean Memory	Arith Reason	Abst Verb Reason	Mean Mem & Verb Reas
Very Superior						
Superior						
Bright Normal	X	X	X	X	X	X
H						
Normal: M						
L						
Dull Normal						
Borderline						
Mentally Def.						

FIGURE 1

Name	Age	Test	Test Date	IQ
BOY	16-6	W	1/11/68	121

	Meanful Memory	Soc Prob Solving	Non Mean Memory	Arith Reason	Abst Verb Reason	Mean Mem & Verb Reas.
Very Superior			X			X
Superior						
Bright Normal	X					
H				X		
Normal: M					X	
L		X				
Dull Normal						
Borderline						
Mentally Def.						

FIGURE 2

GIRL	18-3	W	1/10/68	120
Name	Age	Test	Test Date	IQ

	Meanful Memory	Soc Prob Solving	Non Mean Memory	Arith Reason	Abst Verb Reason	Mean Mem & Verb Reas.
Very Superior			X			
Superior						
Bright Normal		X				
H					X	X
Normal: M	X			X		
L						
Dull Normal						
Borderline						
Mentally Def.						

FIGURE 3

BOY	10-8	WISC	4/2/68	120
Name	Age	Test	Test Date	IQ

	Meanful Memory	Soc Prob Solving	Non Mean Memory	Arith Reason	Abst Verb Reason	Mean Mem & Verb Reas.
Very Superior			X			
Superior				X		
Bright Normal	X				X	
H						
Normal: M						X
L						
Dull Normal		X				
Borderline						
Mentally Def.						

FIGURE 4

Name	Age	Test	Test Date	IQ
GIRL	16-2	W	1/9/68	81

	Meanful Memory	Soc Prob Solving	Non Mean Memory	Arith Reason	Abst Verb Reason	Mean Mem & Verb Reas.
Very Superior						
Superior						
Bright Normal			X			
H						
Normal: M						
L						
Dull Normal	X					X
Borderline		X		X	X	
Mentally Def.						

FIGURE 5

Name	Age	Test	Test Date	IQ
BOY	11-3	WISC	1/18/68	106

	Meanful Memory	Soc Prob Solving	Non Mean Memory	Arith Reason	Abst Verb Reason	Mean Mem & Verb Reas.
Very Superior						
Superior			X	X		
Bright Normal						
H	X					
Normal: M						
L		X				X
Dull Normal					X	
Borderline						
Mentally Def.						

FIGURE 6

Figure 7

Case 1

H.E.J. Boy B.D. 5/10/51

Test Date	C.A.	M.A.	I.Q.	Test
4/13/56	4:11	3:2	64	IHB
1/16/58	6:8	6:6	98	IHB
11/9/60	9:6	9:4	98	IHB
1/8/64	12:8		102	W
5/5/66	14:11		107	W
11/8/67	16:6		119	W

Case 2

B.T. Boy B.D. 2/3/48

Test Date	C.A.	M.A.	I.Q.	Test
9/19/60	12:8		81	W
3/6/62	14:1		91	W
1/5/65	16:11		103	W
11/30/67	19:9		109	W

Case 3

D.V.S.J. Girl B.D. 5/28/52

Test Date	C.A.	M.A.	I.Q.	Test
5/5/59	6:11	6:4	92	IHB
1/12/61	8:7	8:4	95	IHB
1/30/62	9:8	9:2	95	IHB
1/27/65	12:8		108	WISC
1/5/68	15:8		122	W

Case 4

K.J.A. Girl B.D. 1/31/50

Test Date	C.A.	M.A.	I.Q.	Test
7/3/54	4:5	4:10	109	IHB
6/1/56	6:4	7:8	121	IHB
3/3/59	8:1	9:6	118	IHB
1/30/62	11:11		125	WISC
5/12/65	15:4		117	W
9/28/67	17:8		135	W

Case 5

F.J. Boy B.D. 4/13/48

Test Date	C.A.	M.A.	I.Q.	Test
7/11/62	14:3	9:8	70	IHB
1/4/66	17:8		114	W

Case 6

A.P.M. Girl B.D. 7/20/53

Test Date	C.A.	M.A.	I.Q.	Test
4/28/59	5:9	8:10	154	IHB
4/4/62	8:8	12:8	146	IHB
1/28/65	11:6		120	WISC
1/12/67	13:5		99	WISC

THE LOW-VISION CHILD AND VISUAL PERCEPTION DYSFUNCTION

Dr. Louise Sloan

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Baltimore, Maryland

In the past many children were taught only Braille in school although they could and did learn to read visually at home. It is not easy to predict from one simple test what the child's visual capabilities are. A procedure such as that of Dr. Natalie Barraga, and involving a special method of instruction, insures that the child will make the best use of his vision and also helps to determine whether instruction in print reading should be attempted.

Special optical aids other than correction of refractive error are usually not needed before the child has reached 3rd grade reading level. At this stage a combination of two non-optical methods provides the necessary enlargement of image on retina: (a) use of large visual objects and (b) use of short viewing distance. There is no great objection to large print at this stage of learning, and close viewing distance is not a problem because children aged nine and younger can usually sustain accommodation for distances of 7 inches, sometimes less.

With the same size of print, individual differences in viewing distance can take care of differences in degree of visual impairment. For example, letters 1/2 inch in height can be read by:

20/20 eye at 30 feet

20/200 eye at 3 feet

4/200 eye at 7 inches

There are two special cases of young children who cannot accommodate for near without optical aids: (a) those with loss of accommodation from injury or other cause, which is rare; and (b) aphakia (lens removed because of congenital cataract and child left with impaired vision) which is found frequently.

The advantage of reading print of standard size increases in higher grades and especially in college or a job. The smaller the print the closer the required reading distance. Ability to sustain accommodation for close reading distance decreases gradually with age, although at any one age there are wide individual variations.

The purpose of an optical reading aid is to focus its user for whatever close distance is required to read the desired size of print. Four steps are involved in the selection of a suitable aid:

(a) Test reading ability with sentences of graded size composed of words at the 3rd grade reading level. The reading cards should be viewed from the standard distance of 16 inches (40 cm.). The smallest print on these cards, 1M, is about equal to ordinary books and newspapers. Higher M units are multiples of 1M, i.e., 10M print is ten times the size of 1M.

(b) Estimate in M units the smallest size of print the child is required to read or wishes to read. Specification in points is not a satisfactory measure of print size since point specification is a printer's measure of the size of a lead block and various prints of the same point rating may have lower case letters which differ in size.

(c) From (a) and (b) above, compute the required reading distance.

Example: Size of print read at 16 inches (40 cm.) is 10M. Required size 2.5M Required reading distance 4 inches, 10 cm.

$$\frac{10M}{2.5M} = \frac{16 \text{ in.}}{4 \text{ in.}} = \frac{40 \text{ cm}}{10 \text{ cm}}$$

Or, a second example: 10M/1M = 16 in./1.6 in. = 40 cm/4 cm.

The dioptric power required for any given distance is most easily computed if reading distance is specified in cm.

D = 100/reading distance in cm

10 cm reading distance, 10D; 4 cm, 25D

(d) Determine how much of the required dioptric power the child can contribute by accommodation, and how much must be supplied in the form of reading glasses or other optical aid.

If the reading aid is too strong the patient will hold the book closer than the distance indicated by steps (a) and (b). If the reading aid is too weak, the patient will not be able to read for long periods without symptoms of eye strain or blurred vision. In children it is sometimes necessary to have a home trial of two or more different lens powers. For this purpose it is possible to use inexpensive hook-on lenses.

Optical aids may be classified into three groups: (a) Headborne. This is the simplest type and most frequently preferred by children, a strong plus lens for near distance either in a permanent spectacle or as an attachment to the distance glass. (b) Stand magnifiers. When a very strong plus lens is required the headborne type is difficult to use because of critical focus. A focusable stand magnifier is usually preferred in powers of 18D and above. (c) Miscellaneous stand magnifiers of low power may be used instead of (a). They are especially helpful for trial use to determine whether the child needs an optical aid.

Analysis of the records of children shows that, whether they use large print, optical aids, or both, reevaluation is necessary at regular intervals in order to compensate for decrease in amplitude of accommodation, change in reading requirement, and possible change in degree of impairment.

Illustrative Case Histories

CASE 1

E.S. Diagnosis: R.L.F.
Attends regular school
Reads 2M print at 40 cm
Required reading distance for arithmetic is 12 cm

Age	Reading Add	Accommodation Required for 12 cm
8	3D	5D
9	4	4
10	6	2
12	8	0
15	8	0

Comments Case 1 Illustrates need for increasing dioptric power in reading aid because of decreasing power of accommodation with age. No change in required reading distance of 12 cm to see figures in arithmetic book (about 0.7M).

CASE 2

C.S. Diagnosis: R.L.F.
Attends "Sight Saving Class"
Reads 10M print at 40 cm

	Reading Requirement		Reading	Accommodation
Age	Size	Distance	Add	Required
8	1M	4cm	19D (a)	6D
11	1M	4cm	23D (a)	2
12	0.7M (dictionary)	2.7cm	37D (b)	0

a. Jeweller's Loupe
b. Focusable Stand Magnifier

Comments Case 2 Reading requirement changed from 1M to 0.7 (dictionary). Amplitude of sustained accommodation also decreased.

CASE 3

C.W. Diagnosis: optic atrophy secondary to trauma
Attends regular school

Age	Reading at 40 cm	Reading Requirement Size	Reading Requirement Distance	Reading Add	Accommodation Required
8	14M	2M	5.7cm	11D (a)	6.50D
14	14M	1.5M	4.3cm	22D (a)	1.00
15	20M	1.25M	2.5cm	44D (b)	0.0

a. Spectacles
b. Focusable Stand Magnifier

Comments Case 3 Decrease in reading ability from 14M to 20M, decrease in accommodation and decrease in size of print. Doing well in regular school in spite of very low vision.

CASE 4

A.S. Age 15 Diagnosis: R.L.F. and high myopia (12D)
Attends Maryland School for the Blind

Reads at 40 cm	Reading Requirement Size	Reading Requirement Distance	Reading Add	Accommodation
20M	2.5M	5cm	12D (a)	8D
			18D (b)	2D

a. Obtained by removing distance glass
b. Focusable Stand Magnifier used with distance Rx

No more headaches after change from a to b.

Comments Case 4 Reading distance for large print (2.5M) books is 5 cm (2 in.) requiring 20D. Uncorrected myopia supplied 12D but had headaches when required to accommodate 8D. No headaches when given +18D stand magnifier.

CASE 5

L.R. Age 16 Diagnosis: R.L.F. and high myopia (10D)
Attends Maryland School for the Blind

Reads at 40 cm	Required	Reading Add	Accommodation
4M	2.5M (School)		4D
	1M (Home)	10D*	0

*Obtained by removing distance glasses

Comments Case 5 In school reads 2.5M print at 25 cm (10 in.) requiring 4 diopters of accommodation. At home takes off 10D myopic correction and reads 1M print at 10 cm (4 in.). Prefers the latter.

From these examples it is apparent that children, whether they use large print, optical aids or both, should be re-evaluated at regular intervals. This is necessary to compensate for amplitude of accommodation, change in reading requirements, and possible change in degree of impairment.

SPATIAL PERCEPTIONS IN LOW-VISIONED PEOPLE

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When I received the invitation to address this meeting, I was most impressed by the insight displayed by your suggestion that the discussion be centered around "spatial perception" of low-visioned people. This is obviously a topic chosen not out of an ivory-tower but instead from actual involvement with the real issues that are faced by our low-visioned people.

To a group so sophisticated, I am sure I am saying nothing new when I start by asking you to define with me, the word "vision" as a collective term applied to certain behaviors that we observe in our clients and students. Most of these behaviors can be classified as answering either the question "what is that?" or the question "where is that?" In the light of our chosen topic, we are going to turn our consideration primarily to the behaviors falling in the latter category. In what ways are low-vision people likely to manifest inadequate responses to this question? How may we help them move from inadequate to adequate behaviors in these "spatial perceptions" or "spatial discriminations".

Let us start by proposing that any questions which we may be tempted to ask as to anatomical, physiological and neurological mechanisms of the body involved in these discriminations are largely irrelevant to our interests. You and I have no ways of affecting these mechanisms other than indirectly as we are able to help our clients or students find more adequate solutions to their spatial challenges. Thus what follows focuses on the "how" aspects of our problem and leaves the "whys" to the physiologists, the neurologists and the psychologists.

Many years ago it was discovered "what is it" discriminations could, on occasion, be dramatically improved by putting certain lenses in front of the discriminators' eyes. Not infrequently this improved skill was and still is accompanied by a decrement in the "where is it" area. Some of you folks may recall having encountered sudden difficulties in knowing where the steps or the sidewalk or your feet were when you donned that new pair of bifocals. Two important points need to be made here with respect to our problem:

1. On occasion, lenses which are used to modify central vision (the "what is it" vision) have a deleterious effect upon peripheral vision (the "where is it" vision). While this is often true even with conventional, rather low-powered, lenses, it is practically always true, and to a much greater degree, with the lenses used as low vision aids. In fact, it is not hard to defend the statement that "low vision aids" can practically never be worn for other than sedentary use because of their distorting effects on the spatial discriminations of the user.

2. With the majority of low-visioned people, their decrement is primarily in central vision. Fortunately only a few suffer primarily from a decrement in peripheral vision. These latter people, however, are in much deeper trouble than the ones having central vision loss only. Peripheral vision loss often means loss of the person's mobility. For travel purposes, "where is it" is a much more vital question than "what is it"; also while remedial measures (lenses) are pretty readily available for central vision loss, we have much less experience with remedial measures for peripheral vision losses.

Let us look at both of these situations in more detail. The person who is working with low-visioned people should know as much as possible about these two aspects of spatial discrimination if he is to offer maximum help to his changes in their efforts to learn how to compete in what is, largely, a sighted world.

LOW VISION AIDS AND THEIR INFLUENCES UPON SPATIAL PERCEPTION

A few low-visioned people, particularly children, are supplied with aids for viewing distant objects. These are, in principle, miniature telescopes or, better, field glasses. The types used as spectacle aids magnify somewhere in the neighborhood of two times; that is, a person who has 20/200 visual acuity with ordinary glasses can be expected to be able to read letters of 20/100 size when viewing the latter at a 20 foot distance through his telescopic aid. It is not, however, this aspect that is relevant to our topic.

Rather we should realize two things. First, the size of the field of view through a telescopic aid is so limited that if the person wearing the aid were so restricted naturally in his peripheral vision, he would be declared legally blind on the basis of his constricted field of view. Spatial discriminations through telescopic aids are seriously affected. The usual field of view is 200°. Through a low-vision telescope, the viewer can see no more than 18°.

Second, not only is the lateral extent of field reduced to less than 1/10 of its original size, but the apparent distance and sometimes direction of objects seen through the telescope is grossly altered. This knowledge is, however, of little help to the person wearing a telescope who endeavors to move with respect to an object seen through the device. He is almost completely at a loss to know where it is. Extensive efforts to teach even children to cope with these alterations in perceived distances and directions have been virtually complete failures.

While only relatively few low-vision aids for distant viewing are prescribed by vision care specialists, quite a high percentage (at least 2/3rds) of low-vision people who are able at least to identify gross objects through conventional spectacles can be made capable of visual reading of ordinary magazine and book type through the use of near-point low vision aids. Therefore, these are often prescribed.

From the point of view that is our particular concern, the significant thing about these near-point low vision aids is that they all greatly reduce the available field of view as they require that the user move much closer to the material being read than he would do when using conventional spectacles. For legally-blind persons, reading distances through their near-point aids of 4 inches or less are routine. This reduced distance and its concomitant reduction in the field of view has two important influences upon spatial perceptions of the user.

First, the near-point aid (like the telescope discussed previously) greatly reduces the lateral extent of the field of view. In many instances, the user of the aid is unable to see at one time all of the letters of the word he is trying to decipher. Short words are not too bad, but if the author suffers from that dread disease called "polysyllabitis", the low-visioned person may not have enough peripheral visual field left to cope with the terminology.

Second, the loss of field of view has a marked effect upon the ability of the user to keep his place while reading. Traveling from the end of one line to the beginning of the next is no small task when neither the starting point, nor the goal can be seen during most of the journey. The problem is vastly complicated when illustrations, tables, graphs and captions are involved. The very devices which offer a solution to the "what is it" question, pose new and difficult complications in the "where is it" department.

PERIPHERAL VISION LOSSES WITHOUT OPTICAL AIDS

Much more fascinating to me, and much less well known and worked upon, are problems in spatial perception arising "naturally". By that we mean those distortions and limitations that we find in low-visioned people when they are working without the benefit of optical aids or are using only conventional spectacles. Let me cite a specific instance that raises several significant issues.

Not long ago, at the outpatient clinic of the College of Optometry of Pacific University, we had the opportunity of testing, almost simultaneously, two high school juniors, boys. Both Rich and Wilbur showed identical responses to our standard test for acuteness of distance vision. Both scored 20/300 on the famous Snellen scale. This meant that both boys were legally blind--in fact they had come to us through the offices of the Oregon State Commission for the Blind with whom we work rather closely. Here, however, the similarities ended.

Wilbur had come into our clinic's reception area, and had been taken through the rather complex series of turns and doors between that area and our low-vision laboratory, on the arm of his father. He did not travel alone when assistance could be solicited. On those few occasions when he could be persuaded to take off on his own, his path was a cautious, exploratory one marked with shuffling, hesitant gait. Rich, on the other hand, when questioned as to his favorite recreation, answered immediately and eagerly "skiing"!

Two more differently oriented persons with respect to spatial discrimination could hardly be imagined, yet they both showed the same central 20/300 vision. Also, when tested later for extent of peripheral fields of vision, Wilbur showed just as large a field as Rich, although his speed of response to peripherally located objects was far slower than those of his skiing contemporary.

What does this tell us with respect to spatial perception in the low-visioned person? My proposal is that this is a great unexplored area in low vision. In the absence of "instant" remedial measures such as we have for central vision, we have avoided the issue of systematic development of spatial discrimination in the low-visioned. I recall discussing Wilbur's situation with one of the consultants to the Oregon State Commission for the Blind. His prompt analysis was that Wilbur was "neurologically impaired" and that, therefore, "nothing could be done" for the boy.

Fortunately, we did not adopt this "do nothing" point of view. Instead we devised a program of home-supervised activities (Wilbur lives approximately 100 miles round-trip from our clinic) designed to increase his interactions with peripheral events (Wilbur didn't hear peripheral events either, although there was no evidence of audiometric loss).

We encountered some difficulties in what we suspected was some parental preference for the dependency status; also some well-meaning peripatologist at the Oregon State School for the Blind persuaded Wilbur to enroll in a six-week summer course in long-cane technique, "since he was going to be going to college". However, with the cooperation of the physical education people at Wilbur's state college, and his apparent decision to stand on his own feet, he stopped using the cane, and traveled about campus "on his own". Our clinic will see Wilbur again the middle of next month, and I anticipate that his spatial perception skills in terms of awareness of, speed of response to, and accuracy of location of objects, as well as discriminations of spatial relationships between them, will show an identifiable increment.

Spatial perception skills can be evaluated, and systematically enhanced, not only in low vision people, but in all people. We are approaching the time when we shall be able to identify and assist the motor vehicle operator who suffers significant decrements in peripheral awareness as central vision demands go up. The work of Dr. Barraga is setting new horizons in this area. Her very significant successes prompt me to close with one of my favorite theses: "Low vision children are often taught to be blind."

In a world of kaleidoscopic visual events, many of which are perceived only dimly, there is offered to the child the basic choice between utilization and ablation of these stimuli. There is no mid-ground. The visual stimulus, if not utilized adequately, will, unless ignored, constitute at least a distraction, if not an active threat. I know well a Portland, Oregon couple in which the woman with two artificial eyes guides the man who has 20/200 Snellen vision. "All I get out of what I see is confusion!", he says.

How many of our children, dubiously identified as "blind", are systematically discouraged from learning to utilize visual cues from their environments? We blindfold older ones so that they'll learn to read Braille tactually rather than visually; are we at least as tyrannical to our low-visioned pre-schoolers? Do we make any efforts to provide play activities in which the child is systematically aided in developing his ability to utilize peripheral vision for guidance and steering purposes?

Spatial perception is not automatic. It is a learnable visual skill which can be systematically guided and developed with modern methods of therapy. Spatial perception is of momentous importance, socially and economically. It makes the difference between a physically independent individual who moves competently without special assistance through our sighted world, and a physically (and usually economically) dependent person whose demands upon society typically exceed his contributions to it.

If we, instructors of the blind, are to exercise maximum influence towards helping carve niches in a sighted world for our partially-sighted charges, there can be no more important place in which to begin to work than in the early development of adequate spatial perception skills--work which must begin before the forces encouraging ablation of peripheral awareness and reaction have taken their deadly toll.

It is my sober suggestion that the place and time to begin is long before most of us now see the partially-sighted child. Kindergarten is far too late. We must begin at nursery and pre-nursery levels, and we must do it in a framework that rejects, apriori, any notion of structural inadequacy. We, optometrists and ophthalmologists, have no certain way of knowing that any child lacks light perception. If a child even might have light perception we ought to make every effort to help him to learn to use this skill in building his spatial discriminations.

PROGRAMS IN DAILY LIVING SKILLS FOR THE ADOLESCENT

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Charles Dickens, in *A Tale of Two Cities,* said of adolescence, "It is the best of times. It is the worst of times. It is the age of foolishness and it is the epoch of belief." Adolescence has been described as having many ups and downs, growing from wanting protection, security and direction of parents and teachers one hour, and wanting to be independent the next. The teen age requires many adjustments, and we teachers and parents don't make it too easy. We confuse. We say we want teens to have a good time, but times have changed and their idea of a good time is different from ours, and we don't approve of their good times. Supervise youth, believe in them! But don't put them in a small cage where you can watch them all the time. Prepare them, then don't watch them.

Our living skills programs seem to put most stress at the Junior Hi level when the major effort should be in the pre-school years. Administrators, teachers, houseparents and parents have indicated a need for materials, devices and information for teaching techniques of living. Many programs have sprung up. Residential schools, public schools, camps, summer school programs, and individual teachers are all devising programs. Blind adults have told us previous programs have not given enough opportunity to develop the blind normally. We find blind teens who are inadequate in performing simple tasks, who have never cut meat, poured liquids, cut with scissors, struck a match, tied shoe strings. The pre-school age is when sighted children learn these tasks by imitation.

Some of the types of programs on the increase are:

1. Regular school classes, public and residential, which include in the curriculum a course on specific living skills

2. The homemaking program, reaching primarily girls

3. Residential school houseparents who devise programs

4. Summer programs---residential school, public school, and camps

These are all good, but are not enough. Ideally, living skills techniques should be an integrated part of the school program beginning when a child enters school, and continuing at every level. Activities should be planned to develop the blind child as normally as the sighted. We should use all the child development information we have available and teach the blind child to perform each task at the normal age, as nearly as we can.

I receive many questions concerning: What can I teach? Do you have an outline? What do you teach? Where do I get a teaching curriculum? What methods, textbooks, materials do you use? No list can cover the area adequately. It is hard to develop a curriculum to work in every situation. We must take each child at his state of development and teach the individual his needs and likes.

Blind youth need to be taught to be style conscious. They want hair styles, cosmetics, and manner of dress like their peers. Some 14, 15, and 16 year olds don't know how to take a bath. They must be instructed to take a washcloth, soap, and wash the entire body. Each teenager must select and buy some of his own clothing. An interested charm teacher devised a plan to help teenagers know about themselves and identify with a "type". Lists of questions were asked concerning likes and dislikes, favorite colors, kind of car they would like, kind of home, type of man they'd like to marry. Each girl was taught clothing, cosmetics, and hair style to fit her type.

Posture needs to be stressed - holding head up, and looking toward the person speaking or spoken to. They need to learn facial expressions to show various emotions. Graceful sitting, walking, and freedom from unpleasant mannerisms are important.

Developing acceptable eating habits is difficult. Keep working on them. Try harder. Teaching to prepare and serve simple foods aids in handling foods better at the table.

In setting up a program, keep it an experience program. Don't just talk about it, do it. Use a homelike setting if possible, but teaching can be done in a classroom, kitchen, dormitory etc. Equipment is not hard to provide--it is readily available. Use everyday things found in everyday places. Teacher preparation is not difficult. Anyone who lives daily can teach something in daily living skills.

The outcome we expect is to help young blind children go from dependence to independence. Give them confidence in their ability to meet daily needs. Let them become a part of the teen-age world and identify with other teen-agers. Each one must find out who he is and where he is going, and hope he will find "more of the best of times, less of the worst of times, more ups than downs, lots of foolishness and some time to search for beliefs."

Everyone of us is involved in teaching daily living skills, either formally or informally. There is no one right way, there are many ways for a blind person to attain skill. The programs must be made to fit the individual. Houseparents as well as parents are involved in teaching daily living skills all the while they are with the child.

Blind children grouped together for living skills instruction learn from each other. Programs are financed by grants, rehabilitation, schools, clubs and camps. Many resource persons are available to help, such as Red Cross, Gas and Electric companies, Charm schools, etc. These need orientation and guidence in teaching the blind, but can add immeasurably to programs.

We must become experts at defining and describing in words. To teach a simple skill, we must analyze exactly what we do to accomplish the task step by step, then interpret this to our student. When broken down to its simplest steps and taught progressively, most skills become teachable.

Our multiply-handicapped may need early workshop training with half day school to develop skills needed for employability. Workshops for the retarded in the community may be ideal for giving some of these children first pre-vocational training.

Other living skills not mentioned should be included, such as use of simple tools, "manner" skills, and handwriting.

THE NEED FOR SEX EDUCATION

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INTRODUCTION

Sex education in the broadest term denotes an effort to understand human sexuality which means an understanding of human growth, human development and human interaction. This concept emphasizes that sex education is a means rather than an end. Emphasis in sex education is therefore placed on the recognition that human behavior, human interaction and human endeavor are all based on the individual's understanding himself as a member of groups and as a sexual being.

This broad interpretation of sex education is growing and there is developing an understanding for the need of sex education in schools in the United States in spite of a conservative, right wing group who are making every effort to interpret sex education in very narrow confines. This paper will address itself in brief discussions to the following: (1) Why the need for sex education; (2) Terminology, and understanding of one's self; (3) Ourselves as sexual beings; (4) Concepts held about sex and sex education; (5) Knowledge and preparation of parents for carrying out sex education; (6) Preparation of health personnel for carrying out sex education and; (7) Some special implications of sex education.

Why the need for sex education?

Sex education must be considered a part of general education. We can no longer foster the idea that sex education is a function of the church and family alone. When we base this most important aspect of interpersonal relations and real education on spiritual and religious concepts only, we must recognize that it will not only be taught in a superficial way, and information presented will not bring in total community ideas but instead, biased points of view. In its proper function the school's role is the development of the total individual and a healthy sexuality is one aspect of this total development. The school can reinforce the parent and the church, but neither parent nor church can do this alone. Studies have shown that there is a lack of communication between parents and children with regard to sex. Kirkendall pointed this out in one of his early studies in which most of the persons indicated that their sexual conduct was never discussed with an adult. Most of them indicated that the majority of the adults, particularly their parents, did not give them the information and that 90% received information from peer groups (1). In a general aspect Kirkendall and Calderwood indicate that (a) adolescents get most insight about sex from friends; (b) sex information obtained from "appropriate sources" is limited and meager in scope; (c) that received from "appropriate sources" is more aptly labeled "reproduction education;" (d) what occurs between parent and/or teacher and youth is often something being told and; (e) parents and teachers often lack a clear concept of the outcome they would like to achieve through sex education, other than "keeping out of trouble" (2). In a study among middle class university females, Darity observed that only 19% of the girls he studied accredited parents with the major source of sex education. The major sources were friends or peer groups, 44%, and books, 24%. The remaining 13% gave teachers, counselors or a combination.

These examples, and many more, indicate that the school not only needs to be a major institution of sex education, but it must be a major source for sex education. Unfortunately, this is not being easily achieved. The fact that parents and educators hide the fact that sex can be intense pleasure creates a problem (4). Also, because parents and teachers are not willing to accept the normal sexuality of adolescents by ignoring it, they refuse their responsibility of dealing with it and molding it (5). This alone justifies the need for sex education. It should be pointed out that as the need for teachers to be prepared to instruct in "the new math" became a necessity, school administrators demanded facilities for such preparation and teachers were prepared. Why not the same for sex education? We need institutes, workshops, short courses and the like for teachers' preparation in sex education. The fact that sex itself is often placed in a realm external to the individual exclusive of the school argues positively for sex education in schools.

Terminology and understanding of one's self

The term sex education is quite often misunderstood. To many persons it denotes education with regard to sexual intercourse. In actuality, as earlier stated, sex education is concerned with people as sexual beings, and the interpersonal relationships between individuals of different sexes and of the same sexes. The concern of sex education is the development of a "healthy sexuality", and for this it is necessary first to work toward helping the individual understand himself. Understanding one's self means to understand the physiological and psychological processes of becoming a sexual being. This understanding cannot be divorced or separated from the general educational process. However, the uniqueness of individual differences and needs must be kept in mind. These differences are associated with differences in understanding, differences in types of social interaction, and differences in comprehension and in emotional and social needs. Sex education is therefore concerned with self-analysis, self-examination, the establishment of goals, and the acceptance of values and making choices as related to the values one has established for himself. These values will be based on community social values, peer group social values and those social values transmitted or interpreted through the family. Sex education in the school should try to integrate these values and concepts so that they will serve as guidelines for students. With an understanding of sex education in these terms it would seem that the role of the school in sex education is more clearly defined. The school serves as the integrating force and therefore must assume its responsibility for sex education.

Ourselves as sexual beings

Our sex as male or female is an ascribed condition and thus cannot be changed. Therefore, we must learn to understand ourselves as sexual beings, and this means to understand ourselves as human beings. One major aspect of this understanding is the development of gender identity and gender role.

Gender identity is one of the earliest processes involved in understanding ourselves as sexual beings. This is done through emulation of the parents. The boy identifies with the father and the girl with the mother. Gender identity is a learned process, and it is presumed to come about before real sex anatomical identity is discovered. This is a socialization process which is, in all probability, the easiest aspect of sex education for the parents. For the sighted child, role function and gender identity can become synonomous. For the unsighted child a special effort may be necessary through "talking out" role function, and specifically placing the child in a model setting, where the male role and female role with regard to responsibilities in the home may be acted out. Schools have a responsibility for strengthening both gender identity and gender role. Teachers need preparation to work with young children in this respect.

Concepts held about sex and sex education

There are varying concepts held about sex. Harris, Lennon, and Beck did a study of 404 Oregon families in 1945 in two school communities. They observed that one fifth of the parents were in favor of keeping sex knowledge from the child as long as possible; one-half felt nothing should be said until the child raised the question; one-fifth were opposed to children helping to prepare for a new baby; two-fifths felt that it was improper for parents to undress in front of children and one-half felt teachers should avoid the topic of sex (6). We should make more careful study of these ideas today to ascertain whether or not there have been major changes in over 20 years in most American communities since the aforementioned study was conducted.

Kilander did a survey of public knowledge on certain aspects of human reproduction in 1959. His study showed that people are still misinformed and superstitious about heredity. This study also showed that 52% of high school students know the purpose of blood tests; 78% of college students, 85% of adults, and 61% of high school students felt that the danger of venereal disease should be explained during adolescence as a part of sex instruction. This latter finding was compared with a 1936 study, in which 62% of those studied felt that such teaching should take place during adolescence. Kilander concluded that no group is adequately informed. However, he indicated that male students are more informed about the opposite sex than females; and young parents were better informed at that time than young parents were a generation earlier (7).

Maw (8) indicated that ideas on approaches to sex education fall into seven categories which are: (a) those ideas which were more prevalent before World War I; (b) moral persuasion, which correlated sex with sin and could not be changed after marriage; (c) fear, of dangers in present life, venereal disease and the like, which after 1910 was substituted for the fear of after life; (d) factual information, which could be devastating since some material was almost pornographic; (e) ethical understanding, which stresses the development of attitudes; (f) personal development, which the guidance program emphasizes; and (g) human relations, which is a combination of personal development and socialization.

These examples of studies point out some conceptions of sex and sex education. They do leave unanswered such questions as: What is the relationship of these concepts to miseducation? Also, what has been the effect of previous experience with sex education on the various concepts held? Also, what is the relationship of these concepts on the degree of knowledge and the preparation of the population, particularly parents, to carry out sex education?

Knowledge and preparation of parents for carrying out sex education

It has been observed that many people feel that the responsibility for sex education is that of the parents alone. Albeit a most desirable goal, an understanding of the degree of knowledge and the preparation parents have for carrying out this function is important.

Weatherill points out that it is generally agreed parents are responsible for sex education. He says, however, it is desirable that the school should help the parents (9). As pointed out earlier, Harris *et al* (10) indicated in their study that some parents felt that information should be kept from children, while some parents felt that sex education should be discussion between parent and child. These two points of view will have to be reconciled in the particular community where studies are being carried out in preparation for sex education. Under the same premises, the Board of Education and other community groups must work together to understand what phenomena may be operating since the underlying problems may be an extension of a general cultural and social pattern. This may be illustrated by the study carried out in a southern city among 213 mothers from low-income families. These women have an average of four children. Their mean age was 29.50 years. The study indicated that a high percentage were not adequately prepared to carry out sex education (11). This is summarized as follows:

> A retrospective observation of the kind of education that the subjects received in their families showed that in over 68% of the cases mothers or guardians did not discuss marriage or sex with them when they were growing up, and over 65% said they did not ask questions about sex and marriage. Of the total 213 subjects, 71 (33%) said they did ask questions but only 16% indicated receiving answers which could be considered satisfactory. It was further observed that over 50% of the subjects were ill-prepared to answer the simplest questions about sex if posed to them by their children (12).

The ability of middle-income families to carry out sex education may be reflected by college students through their indications of sources of information. In her study of 50 college freshman females, Angrist (13) observed that it was primarily close friends or roommates in which discussion on birth control took place in both high school and college. However, college discussion centered more in peer groups with increased communication between boys and girls. She also observed that discussion with mothers and teachers occurred frequently.

It also appears that uninformed adolescents may turn to peer groups for information on sex rather than parents. This may imply an inability of parents to relate to children well enough to create an atmosphere of inquisitiveness. In the 1964 School Health Study, (14) it was observed that among ninth grade students, three-fourths of the boys and one-half of the girls implied they would never, or at least only sometimes, turn to parents or school counselors for information when bothered with questions about sex.

The need to better understand the degree of knowledge and preparation of parents for carrying out sex education is essential if programs are to meet community understanding and needs.

Preparation of health personnel for carrying out sex education

When one speaks of sex education in a community, quite often the procedure is a recommendation for a lecture by a physician. Usually where this lecture is carried out, it consists of a detailed explanation of human reproduction. To the degree that human reproduction relates to human sexuality, this segment may be adequate. However, this approach is very limited. A broader aspect with emphasis on the development of understanding of the emotional growth of individuals, sexual interaction and interpersonal relations, all of which are most important, are usually omitted by physicians because of lack of preparation. This is natural since medical schools do not prepare students for sex education. Sheppe et al (15) points out that up until the Masters and Johnson report (16) there had been nothing done on the physiology of sex. Medical students were ignorant of the physiology of coitus. They also found that the graduates of medical schools, who are considered experts, may find themselves knowing less than their patients. They reported that freshman medical students, usually college graduates, did not know any more than their co-equals, freshman law students. However, at the end of four years the medical students did know a little more. Hugh (17) summarizes the findings of both Shappe and Harris and Lief in which the general impressions given by Sheppe and Harris coincide with Lief's findings.

Brim points out that in the United States the eight important groups working in parent education, namely; family life, educators, medical personnel, nurses, clinical personnel, home economists, clergymen and religious educators, teachers and parents, all of whom have received special training, have not shown conclusively that they have changed parents or children by any of the usual educational methods (18). Is this an indictment of educational approach or educational method or of both?

Schemia (19) indicated in 1960 in the Journal of Nursing that sex education in the elementary schools where she was working, was carried out one afternoon a year with a movie and answering questions of mothers and daughters. Also being available to answer questions later on was a part of this program. She was attempting at the time to arrange the same with boys, to bring them in closer contact with their fathers. She did not indicate that this was satisfactory, but did state that this was a regular feature of the school system. However, questions can be raised with regard to methodology, particularly, the separation of the sexes. Also questions may be raised concerning the approach through one lecture annually since sex is with us at all times. Steinhauf (20) says (a) sex education should be a systematic introduction as a part of a larger course, (b) all persons who participated must be responsible for the development of appropriate attitudes, (c) every question must be answered honestly, and (d) boys and girls should be taught together. He also points out that a good adjustment of the teacher is necessary.

Determining which professionals in the medical and health field are capable and suitable in sex education is a responsibility of a health department and a part of epidemiological study. There is no doubt that many lay persons, parents and professional persons must form the team for good sex education.

Some special implications of sex education

Education in human sexuality for the child also comes through the discovery of an anatomical difference between boys and girls and raising the simple questions such as, "Where do babies come from?" These simple questions should be answered honestly and frankly. However, the majority of parents are not prepared for their questions nor for the necessary answers. For the parents with the visually handicapped child this becomes quite often more difficult since there usually is no anatomical form to which the parent can help the child relate. Therefore, the school becomes a very crucial element in sex education.

The blind individual, as we know, has the same sex needs, sex drive, sex desires, sexual interaction as the sighted individual, and the development of a healthy sexuality of the blind through sex education in the school is just as important and must receive the same emphasis as literature, art, and the like. Anatomical structures with life-like human qualities for touch must become more prevalent and used in schools of the blind. Teachers of the blind as well as the sighted must attend special institutes on sex education. Parents of the blind need special institutes on how to educate the blind in this area. Just as the curricula have been adjusted to meet the "Age of Sputnik" -- we must now look at the curricula in schools to meet the demand for developing more and better human understanding, developing emotional stability and developing a "healthy sexuality".

Summary

There are social roles which compete with the physiological and psychological development of the individual. Good community education takes these factors into consideration when analyzing the school role. Today it is properly considered by expert educators and by many communities that sex education is a proper function of the schools. This function and role of the school is considered as a necessary complement and supplement of the sex education of parents. The school serves as an integrating force for sex education.

However, before proper sex education can be carried out, teachers must be prepared, parents prepared, and the community prepared. This can be done through workshops, study groups, and any educational effort which has wide community support. Just as the schools have assumed responsibility over the years for education in the varying manifestations of human and community needs, they must assume responsibility in sex education.

This assumption of responsibility is as vital for the visually handicapped as for the sighted because the sexual needs, desires and understanding are no less for either.

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ENHANCEMENT OF FUNCTIONING OF THE VISUALLY HANDICAPPED THROUGH PHYSICAL EDUCATION AND PHYSICAL DEVELOPMENT

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The purpose of my presentation will be to urge all of us to examine the need for stimulating learning through physical activity. I would like to encourage constructive thinking and to help us question our tenacious adherence to traditional practices. First reaction may possibly be that of unconcern or doubting rejection. Certainly there are weaknesses in instrumentation and methodology, and we may argue that we are already doing a far better job than that which is being advocated here. Maybe this is true. There can be little doubt though that improvements are possible and needed in working with visually handicapped students.

A review of the literature reveals that everyone acknowledges the indispensable importance of a strong physical education program for visually handicapped children. Buell (1966) stressed that "physical education is even more important for blind individuals than it is for others because greater physical demands are made on them throughout the day." Superior stamina is required by a blind person as he "must expend much more energy to reach the same rung of success as an individual who has normal vision." Our concern should not only be with the amount of energy expended but when and how the energy is used.

Children with visual impairments tend to be deficient in physical skills and general coordination. The child who is blind often lacks the stimulation to perform many physical activities. Such inactivity often creates serious postural and orientation and mobility problems which can modify body use, intellectual growth, and social and psychological development. We do not know the extent to which this modification or deficiency might, and often does, ultimately rob individuals of optimum growth. Effective training to prevent or lessen these unfavorable outgrowths is especially necessary for the blind child with additional handicaps, particularly the child who is also mentally retarded.

It is chiefly to the primary and lower elementary-aged children and those blind children who are also mentally retarded that I would like to direct our attention this morning. By no means should our investigation of this approach be limited solely to these groups however, as there is no one method of teaching which is ideal for all children. Like everyone here, these students differ in background, in needs, in temperament and in readiness for any given experience. As children vary, so must educational approaches. Limitations in experiences, exploration and participation in various activities can restrict the blind child in the development of physical skills using both his large muscles and/or his small muscles. Restricted mobility deprives the child of proper physical development and experiences, thus creating a vicious circle. These deficits are generally nourished by accompanying social, psychological and educational complications.

There have been no known attempts to implement programs designed specifically for alleviating or decreasing these problems solely by means of physical activities and physical education. This is true even though emphasis is continually being given verbally and in writing to the fact that children who are visually handicapped and mentally retarded suffer major restrictions in their acquistion of knowledge where deficits exist in mobility, physical activity, new experiences and interaction with one's environment. Lowenfeld (1948) has emphasized that blindness imposes three basic limitations on an individual: (a) in the range and variety of experience, (b) in the ability to get about, and (c) in the control of the environment and the self in relation to it. Special provisions for meeting these restrictions go far beyond the adaptation of tool subjects. A physical activities approach could be the answer for some children. The traditional, academically-oriented curriculum may be a major handicap for many of these children as it often fosters boredom, apathy and less than the optimum attainment of intellectual ability.

When the blind child is educated academically during the formative years of his life but is still dependent upon others for moving about, he is thus restricted in motivation and in extending and using the education he has attained. Personal experience and free movement developed especially in physical education programs (Scholl, 1967) will help provide these children with a command of their own environment.

In 1967, the American Foundation for the Blind published as part of its Research Series, *The Blind Child with Concomitant Disabilities* by James Wolf. Wolf's survey of 48 residential schools revealed an absence of any specific theoretically conceptualized model from which the best suited educational diagnostic and instructional processes could be developed for blind children with additional disabilities. It was also found that despite the poor achievement record in Braille reading by retarded blind children and the fact that one-fourth of the children were non-readers, the majority (73 percent) of the teachers believed that their retarded blind children should be taught braille and use this as their primary medium for learning.

The Wolf study makes it very clear that whereas educational objectives have been defined, for the multiply handicapped blind child the learning activities have not been selected that will best aid the attainment of these objectives.

Wanting to at least provoke some questions in your own mind I would like to suggest that a very intensive physical activity approach be considered for these children. We would also agree to the need for more and extensive experiential physical activity. But how many of you would agree to a curriculum with such a program as its hub? I believe that such an approach can effectively be utilized for meeting the needs of many of our students.

In the area of mental retardation separate studies by Oliver and by Corder showed evidence that not only do physical fitness and motor ability of the mentally retarded improve from the effects of a structured physical education program, but that these changes may be accompanied by an increase in I.Q., social maturity, learning ability, and low-skilled work capacity.

James N. Oliver (1958) used an experimental and control group of educable subnormal boys (IQ of 54 to 86) in his study. The boys were matched as nearly as possible for age, intelligence, size and physical condition. The experimental group was given a ten-week course of systematic and progressive physical conditioning and recreational activities of two hours and forty minutes duration each day. Statistically significant improvement in the mental tests as well as with physical qualities and abilities was found through the use of analysis of variance on gain scores. Oliver considered the factor responsible for the mental improvement to be largely emotional, a combination of (a) the effect of achievement and success, (b) improved adjustment, (c) improved physical condition, and (d) the effect of feeling important.

W.O. Corder (1966) investigated the effects of a planned program of physical education on the intellectual, physical and social development of educable mentally retarded boys. An experimental group of eight boys was given an intensive 20-day program of physical education. Eight retarded boys designed as "officials" met each day with the training group while eight others served as the control group. It was found that the experimental group made significant IQ gain scores over the control group on the Full Scale and Verbal Scale of the WISC.

Such research, though confined to small subject populations, mentally retarded boys and other limiting factors, should encourage us to explore extensively the feasibility of utilizing a physical activity, physical education approach for increasing the cognitive development of the young blind child and the educable mentally retarded blind child. An excellent article by Phil Hatlen in the *International Journal for the Education of the Blind* in October 1967 advocated a curriculum for severely multi-handicapped children with much physical activity and a great deal of purposeful movement as its core. A program such as this could be extremely beneficial to the educable mentally retarded and our students in regular classrooms also. Let me acknowledge here, too, that I am not a physical education instructor nor am I lobbying for them. In fact, physical activity as I envision it would be only partially the responsibility of the physical educator as it is now. Classroom teachers who do not tie themselves and the students down to working only in the classroom need to carry the main responsibility. This "out-of-the classroom" teacher would be responsible for cognitive growth through concept developmental experiential lesson plans and considerable interaction with the environment. Physical educators can be responsible for the musculatory and postural development. Orientation and mobility needs to be a joint effort. Of course parents, the family, house parents and peer group companions should be very much involved also.

Far too few of our students are really getting the kind of physical activity program they need and deserve. We can be quick to give lip service to the quality of our present programs but the end results all too often should cause us to question the validity of making positive statements.

Thinking back to some of the students I have worked with in the past, I very strongly wish now that I had gone much more extensively into such an approach. The title of this conference is Beyond the 3 R's. Great! Beyond (a) restlessness, (b) reversion and regression, and (c) rudimentary routine. And this pertains to youngsters in the regular classroom. A well constructed and instituted curriculum outside the classroom could occasionally have been considerably more valuable and worthwhile if only for a few hours or for a period of several days.

We are all aware of the blind child's need to understand various basic concepts of distance, size, texture, and relationships. The mobility instructor for example is readily aware when such knowledge is lacking, making it necessary for him to devote valuable time to teaching these concepts before he proceeds. If, however, the children had received an adequate background of enriching experiences earlier, then the limited time of the mobility instructor could be more economically used for his teaching specific mobility skills.

In the last few years it has become increasingly apparent that formal orientation and mobility education has had an undeniably important impact upon learning. Physical activity as described here should be viewed as the broadest interpretation possible for orientation and mobility with all teachers, house parents, friends and members of the family needing an understanding of the development of these skills. "This awakening on the part of educators may be the most significant development of this decade, in terms of the lifetime needs of visually impaired children and youth" (Alonso, 1965). If such activity is this important for blind children in general, is not an even more intensive approach more meaningful for those children who are not presently reaching their highest level of attainment?

The blind child cannot completely learn about his environment or himself solely through the use of words. Still, the farther a child proceeds in school, the more we expect and even demand that he acquire information, concepts, ideas and understanding through the use of words alone. Since so much communication for the visually handicapped is entirely by verbal description, the blind child, when needing to function kinesthetically or tactually, may make inaccurate movements or related a nonacceptable meaning of a previously verbalized concept.

An enriched physical activity program should provide these children with more than the common, everyday experiences necessary for ordinary physical growth and for their emotional, social and intellectual development. It is through such an intensified program that the kind of foundation can be built which will provide the basis for greater and more meaningful progress in later learning.

We need to remember the experience and mental growth go hand in hand; that the blind child's imagination and reasoning power can be developed through the use of physical activity; that new experiences can be acquired through the process of association, and memory made sharper through interest and practical use.

Many teachers forget to really teach, and in place of teaching try to pour a mass of unrelated facts into the blind student's head and are satisfied to have the child give back these facts in parrot-like fashion. Surely they must know that this automatic performance has little or no lasting value to the student who has had limited experience or a weak foundation from which to build. Robot retrieval does not allow the child to develop his intellectual potential to its highest peak but may make academic subjects dull, meaningless, useless and without pleasure to him.

Before presenting any curriculum, whether physical activity oriented or not, the teacher should find affirmative answers to these questions: Will this type of experience develop the child's mind, make him think for himself, reason things out, help him to associate this new information with what he already knows? Will it be beneficial to him over and beyond this lesson? Does it meet his needs for self growth?

The goals through physical activity should vary in the degree of effort and skill necessary to reach the children. Some goals may be accomplished through participation in simplified activities in a brief period of time. Other goals may require more skill, varied efforts, and a longer period of time. It is agreed that blind children "will need special individualized instruction to develop the necessary physical skills and competencies" (Clapp, 1965). Adequately determined objectives include those which can be reached through the individual's own interest and efforts and those which are termed "teacher objectives." The teacher's objectives need not always be known by the children, but the pupil's objectives should be the child's and should be discussed with the child. It is best that the pupils have a clear conception of what they are attempting to accomplish, and that they are aware of the benefits derived when the objectives have been reached.

The success of such a program as I have advocated could be partially measured and evaluated through creativity and modification of the Orientation and Mobility and Physical Education sections of the *Self Study and Evaluation Guide for Residential Schools* published by the National Accreditation Council for Agencies Serving the Blind and Visually Handicapped. Whereas a residential school might more easily be able to adopt such a physical activity program for some of its students, the program could also be adapted to the needs of a child in a resource room. The resource or itinerant teacher might have reason to be even more concerned about such an approach as the public school teachers would not ordinarily be working on the additional concepts and experiences necessary for a blind child.

Controlled experimental studies of diversified and extensive physical activity programs should be fully explored for blind children in the primary and elementary grades and for those blind students who are also mentally retarded. Oliver and Corder have shown that increased intelligence quotients and other positive effects have been gained through a special physical education program for mentally retarded children. Their results, though not directly applicable to the area of education for those who are visually impaired, should encourage us to explore this concept for best working with our students. Such a program may serve as the core of a curriculum with the traditional academic courses to follow. The physical activity core may be supplemented by reading and arithmetic or any other subject as long as that subject does not become all important. The selected activities and experiences, methods and procedures utilized would have as their ultimate goal the furthering of the following aspects of development in blind children:

1. Improved posture, coordination and physical fitness

2. Greater awareness of the functions of one's own body and how movement can be controlled

3. Increased curiosity in one's environment and increased motivation in exploration

4. Increased perceptive exploration in the study and recognition of tactile forms and objects

5. Increased social interaction and growth

6. Improved ability to conceptualize an organic whole from its parts

7. Improved self-concept as a result of the ability to make first-hand judgments instead of having to accept the verbal explanations of others

8. Improvement in orientation and mobility

9. An increase in intelligence quotient

And now before Mr. Brothers outlines some suggestions for you as to what some of these physical activities might be, I would like to read to you a very favorite quotation of mine as given by a patriarch in the field of education for the visually handicapped, Dr. Samuel Gridley Howe.

> Never check the action of the blind child; follow him, and watch him to prevent any serious accidents, but do not interfere unnecessarily; do not even remove obstacles which he would learn to avoid by tumbling over them a few times. Teach him to jump rope, to swing weights, to raise his body by his arms and to mingle, as far as possible, in rough sports of the older boys, and do not be apprehensive of his safety, and if you should see him clambering in the branches of a tree, be sure he is less likely to fall than if he had eyes. Do not too much regard bumps upon the forehead, rough scratches or bloody noses, even these may have their good influences. At the worst they effect only the bark, and do not infuse the system like the rust of inactivity.

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STIMULATING LEARNING THROUGH PHYSICAL ACTIVITY

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When presented with a topic such as "Stimulating learning through physical activity", I felt it was most natural for me to turn toward the field of physical education for some of the answers. I should have realized that the answers are not always where you expect to find them. When I began my work with young blind children out in Oregon I soon realized that the objectives of physical education were attainable only after the achievement of effective orientation skills. Orientation skills in this context refers to the basic techniques as described by Blaha (1967). This conclusion had far-reaching effects for me, for I began to look at all program objectives with a much broader perspective. The fields of mental retardation, learning disabilities, and physical education can make contributions in the area of motor learning.

Each of us has a framework within which we have structured our educational goals. Fairly early in my experience I was impressed with providing an environment where we could achieve active student participation. From my experience with young visually handicapped children I have felt the curriculum should be experientially oriented. I have provided this brief personal background hoping you will better understand my point of view as we discuss the research from physical education, and the movement theory programs of Kephart, (1966), and Barsch (1967).

Physical Education Research

With the present topic I naturally turned to the available studies in physical education, but unfortunately I can report very little.

Many of the early studies were correlational in nature and dealt with college and adult populations. The relationships of academic achievement to physical fitness were quite low. (Johnson, 1942; Giauque, 1935; Hinrichs, 1941). On the other hand Kulsinski (1945) found high positive relationships between IQ and the ability to perform fundamental muscular skills with 5th and 6th graders. Creed (1946) found significant relationships between recreational participation and industrial efficiency. Differences that were identified by participation vs. non-participation received the attention of Sperling (1942) who found significant differences in the personality patterns of varsity and intramural athletes as opposed to the non athlete. Level of ability did not appear to be as great a contributing factor as that of participation.

The American Association of Health, Physical Education and Recreation, as recently as May 1968, conducted a national symposium on perceptual motor theories as they relate to physical education in the elementary school. Philbrick (1968) prepared an annotated bibliography of selected reading for perceptual motor learning. It is encouraging to note that physical educators are beginning to take a closer look at the needs of all exceptional children.

A leading exponent of perceptual motor learning has been Dr. Kephart of Purdue University. He has been concerned with the slow learner, but much of his program has been widely used by educators in the general area of mental retardation. In addition, Barsch's "movigenic" curriculum was developed for the learning disabilities but can make a significant contribution in the area of the visually handicapped.

Kephart Theory

Briefly, Kephart has taken the position that all behavior is movement of one kind or another, and movement constitutes learning units that contribute to total knowledge. Motor behavior then becomes fundamental to the learning process. In Cruickshank (1966) Kephart states that motor skills need to be automatic if the child is to exert some influence over his environment. He makes an early distinction between a motor pattern and a motor skill. The skill is the more specific of the two, but our major goal is the accomplishment of patterns. Walking is a skill, while locomotion in general is a pattern. Kephart states that the higher levels of functioning such as generalization, perception, and concept formation are all based on the primary fundamentals of motor response. To express it another way, if energy is diverted for the sake of motor functioning, so that our student is forced to think about his movement, he will have difficulty in making generalizations.

There are four motor generalizations which are essential to the attainment of higher levels of functioning. These goals may be listed as: (1) balance and maintenance of body posture, (2) locomotion, (3) contact, and (4) receipt and propulsion. Let me focus on each of these components, and suggest activities which would be appropriate for a visually handicapped child, keeping in mind his needs as well as the rationale expressed by Kephart.

The activities, games, stunts, etc. that I suggest are based on my background in physical education and orientation/mobility. Each of you is encouraged to evaluate them from your point of view; you will soon recognize possible applications, whatever your situation.

Balance and the maintenance of body posture

The objective of this generalization is to maintain an adequate relationship to gravity, aware of the point of application and its direction. This suggests that we provide the student with some consistent spatial organization. To develop an awareness of "uprightness' any number of locomotor skills could be used, such as the skills of walking, jumping, running, leaping, etc. Animal walks and other mimetic activities should prove highly satisfactory. The balance beam and balance board can provide challenge in the area of self-testing stunts. The trampoline can serve to focus on the gravitational forces with which we must contend. Kephart (1960) has utilized the walking board, jumping, skipping, and hopping as test items in his perceptual rating scale.

As we progress through these motor generalizations keep in mind the importance of practice and the repetitions necessary for skills to become patterns. Only the natural athlete or the gifted performer approaches the pattern level of performance. Opportunity for practice is crucial. An enormous amount of random motor experimentation is necessary for a visually oriented child. The visually handicapped child, in this respect, could be considered motorically deprived.

Locomotion

Locomotion seems especially important to the blind child. Only through locomotor generalization can the child observe the relationships of objects in space. Moving between two objects he observes their relationship, but in terms of Kephart, locomotion should be more than a skill, it should be a "happening". All of the child's energies should be directed toward the discovery of spatial relationships around him. The mobility specialist would probably tell us that conditions for learning depend on a knowledge of the environment and a high level of self confidence.

In addition to all of the locomotor skills, activities should include games which explore the environment such as hide-and-seek and treasure hunt, or chase games where a knowledge of the area is essential. Examples would be cats and rats, animal chase, tag, or lame fox and chickens. Structuring exploration by using such games as follow-the-leader, or Simon-says, may also prove useful. Provide some self-testing stunts which involve orientation skills since this would encourage exploration and locomotion.

Contact

Contact is concerned with the manipulation of objects through a reach, grasp, and release progression. The student observes relationships within objects or within a described field. From these motor observations Kephart feels perception of form and figure-ground relationships will be formed.

Applications for this generalization have meaning if we consider landmarks as being the foreground stimulus. Landmarks may be reached, used, and discarded or released. Activities involving handcrafts, recognition of forms, and even practice with tactile discriminations at a pre-reading level would seem appropriate.

Receipt and Propulsion

Receipt and propulsion is the investigation of movement toward the subject and movement away from himself. Activities which come to mind are those involving a moving object such as a ball, some body part, or even the sound of a moving automobile. The understanding of propulsion, directionality, and resultant forces are closely allied to activities requiring throwing, batting, kicking, hitting, catching or bouncing a ball. The simple act of pushing another person in a swing could prove to be an important activity. When possible, the use of auditory cues for directionality are recommended.

The activities I have suggested are not new. They can all be found in the publications of Dr. Buell in both written and movie form. They have been clinically validated in the sense that they seem to work. I know, however, that in many cases the behavior we elicit does not require motor activities that are necessary for the generalizations just mentioned to become patterns. For our convenience the child may be deprived of the very experiences which would eventually free us to be more effective teachers.

In this part of the presentation I have attempted to focus on motor patterns, and their development. Kephart has made comments on veridicality, perceptual motor match, and time structure which I feel are important, but are not relevant to this discussion.

"The Movigenic Curriculum"

The theory of "movigenics" as formulated by Dr. Raymond Barsch (1968) is based on the learner seeking efficiency in physical and cognitive movement. And I quote - "Man is a constant seeker of data, his survival depends on a constant need to process information." The achievement of movement efficiency was seen as dependent on fifteen basic components which were grouped according to (1) Postural transport, (2) Perceptual cognitive modes, and (3) Degrees of Freedom. It is my purpose to focus on the specific components in each group and suggest activities or procedures which have significance for me.

Postural Transport

The components of postural transport are muscular strength, balance, body awareness, spatial awareness, and temporal awareness. Some components are similar to those suggested by Kephart. This is quite natural, because when working with physical objectives it is almost impossible to focus on or isolate one and demonstrate that its accomplishment is specific in nature. Many activities may be used to gain the same objective and on the other hand one good activity can account for many significant outcomes.

Muscular strength may be achieved through any number of activities which require the use of a force and a resistance. Parts of the body may be used as in conditioning exercises, or the use of apparatus may serve a similar function. There is a minimal degree of fitness necessary for the development of kinesthetic awareness, which will be discussed in more detail later.

Balance is very related to muscular strength and the activities for one are appropriate for the other. Going back to the discussion of balance according to Kephart will serve to illustrate the type of activities I have in mind.

Body awareness or body image are the concepts needed for the attainment of spatial relationships. They are in fact prerequisites to accurate spatial concepts. By grouping spatial awareness with body awareness I feel I have more latitude in presenting the spatial organization and structure which Barsch provides. Perhaps you should put a star beside these components, because for me they are significant contributions to the area of the visually handicapped.

Before I get carried away with his spatial organization, let me suggest activities that would contribute to body awareness. The child should recognize the position of his body and this could come through stunts such as wring the dishrag, rhythmic patters individually or with partners. To add an element of speed try the reaction-type games such as musical squat down, Simon says, or stop and go. Feedback is so important that the student should be questioned concerning his position at every opportunity. He should develop a feel or kinesthetic awareness when he is accurate. Tumbling stunts and swimming would seem very appropriate for the tactile sensations achieved when moving a limb through the water.

Barsch, in his spatial organization, defines space as "an abstraction derived from the relative interval between and among objects requiring always a referent and a terminal point". The fields of space are right and left, divided by a ventical plane; front and back divided by a line extended from within the body laterally toward infinity; and up and down which is defined in more visual terms. By this I mean the dividing line is a diagonal from the eye of the subject to a point some six meters ahead on the floor. I think you can see that spatial organization is closely related to the individual, actually being a part of him. Spatial relationships are also dynamic in nature, never being constant or fixed. The structure of the environment is relative to the individual's position at all times.

Barsch related the concept of learning to participation in the experiences that were provided. He certainly sounds as if he is talking about a blind child when he says, "From infancy onward the performer must learn to locate objects, events, and happenings in those respective fields. He must identify, differentiate, and discriminate fields of experience and move in response to those experiences provided."

The "movigenic" approach further structures three zones of space. Near space is a two foot distance associated with reach, grasp and release. This is the performance area for manipulation. This is the space that must be most thoroughly organized for the highest possible levels of efficiency. The next zone outward is midspace which would approximate two to sixteen feet in all directions. In operational terms it is a distance that can be managed in a few steps. Far space extends from 17 to 30 feet and was determined through a visual context.

Before going on, let's quickly look at what these zones of space mean to the blind child. Near space must provide security. Midspace may be highly significant from a research point of view. Beyond this space we can see the problems of veering and effective sound localization developing.

For some time the orientation/mobility specialist has utilized a spatial structure in his program sequence. He has chosen categories such as indoor-outdoor, or the progression from home to neighborhood to downtown business areas. At this time I am in favor of looking at the model of Barsch since it provides a structuring in operational terms that we need for research purposes.

Perceptual Cognitive Modes

The second major group of components are gustatory, olfactory, tactual, kinesthetic, auditory and visual. These components acquire information necessary for the survival of the organism. Due to limitations of time and the emphasis that has been placed on motor development only the tactual, kinesthetic and auditory modes will be discussed in any detail.

The regular classroom teacher can offer many contributions to the development of tactual perception. Just consider the arts and crafts or the manipulative activities where the student can focus on the relationships of objects to the real thing.

The kinesthetic mode requires a "feeling of motion". Barsch points out that kinesthetic organization is not necessarily the product of customary experiences. In other words kinesthesia doesn't automatically follow a regimen of walking, creeping, and crawling. As mentioned earlier an efficient kinesthetic system is dependent on minimal levels of muscular strength. Of great importance is the feedback system involved in this mode. "Only as the individual can perceive his own movements can he make the necessary modifications to improve his efficiency".

A whole group of activities came to mind as I thought about this mode. Basically they could be termed relaxation exercises, such as, systematic, and conscious contraction and relaxation of the large muscle groups about the body. With practice the child could become conscious of differences and be better equipped to think about his movement and how it "feels". An added feature of this type of exercise is that the rate or speed of movement can be controlled.

The auditory mode is one of our distance senses and as such serves to scan the environment for us. Our interest with blind children certainly requires us to focus on the localization, discrimination, differentiation, and eventual classification of sounds in the environment. Activities with high degrees of structure and the totally unstructured situation where you listen to traffic sounds are equally important. Again the classroom teacher has much to offer. We are just beginning to explore the variables in listening through compressed speech and although the data do not support increased effectiveness through practice I wouldn't ignore the possibility, especially for this age group of children. On the playgrounds most games require an awareness of others in the spatial fields. Object perception of course is dependent on the auditory mode, and we are constantly encouraging the student in this area.

The visual mode is at the top of the percepto-cognitive hierarchy. It is the most important, because it can not only scan for information as a distance sense, but can also discriminate so much more effectively. Unfortunately we have been deprived of using this mode, and possibly we have been more restrictive than the situation warranted. The enhancement of visual perception is an exciting concept but, as you must also realize, most complex. It is so complex that one session of this conference has already been devoted to it, but I would recommend the study of Barraga (1964) as a pioneering effort.

Degrees of Freedom

The third and final group were considered to be components which serve to enrich the learner. Bilaterality is concerned with the development of both sides of the body. For example, Barsch has used the term bilateral balance which can be observed behavior as the child rolls along the ground or performs repetitive vertical jumping. He feels that the body needs to make an equalized contribution. Unequal thrusting patterns pull the body off line. A major objective of having young children jump on the trampoline is to gain control and have the ability to land in the designated landing area. For me this concept has implications for correcting the tendency to veer that we see in many of our children.

Rhythm as described by Barsch takes the form of a reach, grasp, release, type of orientation. In this respect it is quite similar to the area of motor generalization called "contact" by Kephart.

Flexibility according to movigenic theory has a counterpart in agility as described by the literature of physical education. In both areas it is the making directional changes with ease and grace, comfort and economy, and above all with control. Activities which contribute to this attribute have to be structured so that the child has confidence to move about in his environment. Games requiring dodging and running would be appropriate. Simple apparatus and tumbling stunts certainly focus on body control. It seems apparent that flexibility, like all of the degrees of freedom, depend on earlier phases of the program for their determination.

Motor planning is dependent upon an adequate understanding of resultant forces and an accurate concept of body image. An example from mobility is using the cane as an extension of the arm and having an understanding of where and how the tip is moving when a force or direction is applied at the wrist. All of you have had the same experience when teaching the young child to use an eating utensil. In more general terms, it is an understanding of the consequence of movement.

My intention has been to present theories based on clinical and diagnostic techniques and recognize them as such. The programs could not and should not be accepted in their entirety. On several occasions I have alluded to possible research implications. Research should be based on a try-out period and have a basis in practice. To be effective we need to define the researchable questions.

The programs have meaning for me based on my experiences, and I hope that I have been able to communicate some of that feeling to you. Rosenthal (1966) has shown that teacher expectations can significantly affect the learning potential of students. I recognize this phenomenon as I ask you to consider very carefully a motor approach to learning. As you study the area more closely

I know you will feel more strongly about it. We are all interested in the enhancement of learning; why not through motor activity?

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A 1968 PROGRESS REPORT ON LISTENING RESEARCH AT APH

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Introduction:

At the Salt Lake City Meeting, a first report of our long term research program on the use of recordings in the education of the blind was presented. In this project, it is our plan to compare the relative effectiveness of listening and reading as media for education, to identify efficient techniques for use in study through listening, and to develop equipment and recordings especially designed for this purpose.

You may recall the report given in 1966 by Miss June Morris describing the outcome of our studies of the relative efficiency of reading and listening in study. These studies were conducted at both the elementary and high school levels and involved the curricular areas of literature, social studies, and science. Their results strongly supported the conclusion that while there were few absolute differences between amounts of learning resulting from reading or listening, in terms of time spent, listening appeared the more efficient medium. The possibility that this might not always be the case (for example, for very difficult or highly technical material) was noted.

Other Early Research:

We did not report at the Salt Lake City meeting on other listening research we had completed. One such study was based on analysis of intensive interviews of students who customarily used recordings in study. Since some of the results of this research provided the background for the research to be reported today as well as research currently underway, it might be well to summarize these.

> The most immediate impression given by the interview results was that many incompatibilities exist amoung the playback equipment, recording formats, writing equipment, and the techniques students utilize. For example, it requires two hands to operate a brailler in note taking leaving no hands available to operate playback equipment as it is currently designed. This makes it appear that use of recorded texts, as described by these students, is no more than a makeshift expedient. For it to become any more than this would require development of a system of playback equipment, recording formats, and user techniques specifically oriented to the task of study. The interview material provides partial information needed to describe this task. However, additional data are needed.
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> Some of the specifications for adequate playback equipment can be inferred from students' comments. A primary need seems to be for control systems which can be knee or foot operated. Disc equipment should have both forward and backward movement allowing for easier place finding and repeated listening. A wide range of speeds (perhaps continuously variable) should be available to help in scanning and place finding.
>
> Possibilities for development of recording formats can also be inferred. Techniques are needed for making page numbers and other entry information stand out from the text so as to be obvious for search purposes. This material should be presented at much faster speeds than the text material to facilitate search. Textbooks should have braille or large type supplements for tables of contents, indexes, glossaries, and certain graphics.
>
> Techniques for use of recorded text materials should be described and students instructed in these. For many students the listening experience appeared to be passive to the extent that little learning seemed possible. The student should actively engage the material. Note taking is one means of doing this. Although it appears that recorded note taking techniques may be most efficient, almost no use of these was reported. It seems that many of the techniques suggested by learning theory and described for use in study by reading would be applicable also for listening.

> This information should be available to blind students. The fact that students reporting active techniques (note taking) proved to be better listeners supports these conclusions.

It was the latter conclusions, stressing the importance of active engagement of the student in the listening study process that stimulated the research to be reported here. The purpose of this research was to compare learning achieved through active and passive listening.

Research on Active Participation in Listening:

During the course of our previous research on listening, we have been concerned continuously with the problem of attention. Postures assumed by subjects during listening (ranging from upright business-like attitudes to cradling the head in the arms on the desks) suggested a variety of degrees of attentiveness. In our interviews, attentive postures were mentioned as critical to good listening and the necessity for activity during listening was emphasized. Such activity could be peripheral to listening activity, i.e. knitting, or could constitute active involvement in the listening learning process as in taking notes.

These comments of students on the necessity for activity are supported by evidence long existing in psychological literature. A favorite example of the effects of peripheral activity on learning is the experiment of Bells and Stauffacher (1937) where subjects who memorized material while squeezing the handgrips of dynamometers learned more than subjects who did not engage in this activity. Another example is an early study by Gates (1917) which showed that recitation while learning facilitated the learning of lists of nonsense syllables and short biographies.

Consequently, it appeared important to confirm empirically the effects of active participation on learning through listening. At the same time, it appeared of interest to compare learning at normal listening rates with learning at compressed rates under conditions of active and passive involvement. Foulke and Sticht (1966, p. 27) suggest that comprehension of compressed speech deteriorates at increasing rates of compression because the rate of information input exceeds the information handling capacity of the auditory channel. If this is the case, interruption of the message for recitation could result in greater facilitation of comprehension for compressed materials than for those presented at normal rates of speech.

Since earlier research (McClendon, P.I., 1956) had indicated that note taking during lectures had little or no effect on listening comprehension, it was decided that active participation should take the form of repetition of material.

Procedure:

Six similar studies were designed to compare learning achieved under active and passive conditions of listening for material presented at normal and moderately compressed rates. Studies involving three curricular areas were conducted at both the elementary and high school levels.

Subjects in each of the six studies were equally divided among three modes of listening: (1) continuous listening, (2) listening interrupted at four intervals for 45-second periods during which time subjects were to mentally review what they had just heard, and (3) listening interrupted at four intervals for four-minute periods during which time subjects were to make written notes on what they had just heard. In addition, subjects within each listening mode were equally divided into two groups which listened to the material presented at two different word rates. Immediately following listening, all subjects were tested for comprehension.

A special feature of these studies was the technique used to assure high levels of motivation. At each research site, participants were told they had been divided into equal groups that were to participate in a "listening contest" and that each member of the group achieving the highest average score would receive a prize as a reward. The prize was a box of candy, but subjects were not apprised of what it would be. Elementary groups competed only with other elementary groups and groups from the upper grades only with others from their level.

Matierals:

The materials used to study listening techniques were taped recordings of the same six selections as were used in the listening research reported earlier in which efficiency of learning by listening was compared with that of learning by reading. The selections included material at two levels of difficulty for three subject areas: literature, science, and social studies. One level of difficulty was appropriate in language and content for students in the elementary grades and the other for students in the upper grades.

For the present studies, the selections were reproduced at two word rates; one being the normal uncompressed rate of approximately 175 words per minute (wpm) and the other being compressed to approximately 225 wpm. The Tempo Regulator, as modified and used by the American Printing House for the Blind, was the device used for compression.

Braille multiple choice tests were used to measure comprehension. Subjects were given as much time as feasible to complete their tests. Scores were prorated for those not finishing if they had attempted to answer 85% or more of the questions.

Braillewriters and/or slates and styli were provided for those subjects required to write. Subjects were premitted to use either the one to which they were most accustomed or the one they preferred.

Subjects:

All subjects taking part in the study of listening techniques were legally blind students enrolled in regular classes at 15 residential schools for the blind. Each customarily read and wrote braille. A total of 720 participated: 240 in the literature part, 240 in the science part, and 240 in the social studies part. One hundred twenty of each were selected from grades 4-7 (60 from grades 4 and 5 and 60 from grades 6 and 7) and 120 from grades 8-12.

Two levels of elementary subjects were used as previous research and uncovered significant grade level differences within groups using the same material. Each elementary treatment group consisted of 10 subjects from grades 4 and 5 and 10 from grades 6 and 7. As earlier work had found no grade level differences between students in upper grades, these subjects were selected without regard to grade.

Results:

First, let's consider the question of whether more active participation in the listening process increases comprehension. The answer is a qualified - yes, it does.

At the elementary level, this effect occurs only for the material which was compressed to 225 wpm and occurs for all curricular areas. Generally, the note taking form of repetition produced superior comprehension.

At the high school level, from the overall standpoint, note taking again produced comprehension superior to that for the other modes of listening. However, the extent of this result varied with the type of material. The effects were very strong for literature and social studies. They were less obvious for science. For literature, the mental review type of repetition was as effective as note taking.

Let's next consider the question of differences between comprehension for materials presented at regular and compressed rates. As we have seen, at the elementary level, active participation in listening resulted in improvement of comprehension for compressed materials only. At the high school level, however, the effects of active participation in the listening process were similar for materials presented at regular and compressed rates.

One peripheral finding was quite unexpected and surprising. In five out of six possible occurrences, students comprehended materials presented at regular rates (175 wpm) considerably better than those presented at compressed rates (225 wpm). This is in contrast with all other research, where speech rates were increased to 250-275 wpm before difference in comprehension between these and normal word rates occurred. The only apparent difference between our studies and those conducted earlier appear to be motivational. In the present studies a high degree of motivation was achieved through the "contest" approach. These findings imply that, under conditions of high motivation, the advantages attributed to use of compressed speech may be suppressed and that regular rates of speech may be more effective in educational communication.

Research Planned for the Future:

Now, just a word about future activities. During the forthcoming year, we plan to pursue two goals of our project: (1) Continue comparing the relative efficiency of reading and listening as means of learning and (2) develop equipment and recordings especially designed for use in study.

One project now being initiated will compare reading and listening comprehension for blind students in low ranges of mental ability. In earlier studies of braille reading by such students, we found that those within the IQ range of 65-85 read slowly; at about 50 wpm. The job of learning to read braille is extremely difficult for this group and, because of the poor techniques evolved, comprehension is poor. In effect, braille reading for this group may comprise an additional educational handicap. Consequently, listening may be a superior medium for education of these students. This is a question that will be investigated this year.

Another project is stimulated by a finding of our user interviews which was summarized earlier. This was the finding that the design of the recording equipment and materials used by students in study appeared to be based on recreational instead of educational requirements. In view of this we plan to attempt to develop a system of recording equipment and materials specifically designed around study requirements.

Development of two study systems is eventually envisioned; one using magnetic tape input and one using pressed disc input. Initial emphasis in this project will be on the pressed disc system since capability currently exists for high volume production of recordings in this form. Specifications for the system will be derived from a task analysis of the study job. Since this is not complete at the time of this writing, complete specifications for the system are not available. However, on the basis of the informal analysis made to date, directions of development can be indicated.

The current Talking Book Reproducer will be modified in a variety of ways. The turntable will be made to run both backward and forward. Forward movement, at least, will be continuously variable over a wide range of speeds. Controls for start-stop, forward-reverse, and turntable speed will be designed for foot or knee activation.

Recorded textbook formates will be modified and supplemented by braille and large type materials such as indexes.

Recording methods will be developed using stereophonic techniques which will allow two sound tracks to be recorded in a single groove on the disc. One sound track will contain the text and the second sound track page numbers and index information. The user will be able to switch tracks at will. Differential in speeds of recording tracks one and two will provide for slow text playing speeds on track one and rapid search on track two. A desirable part of this development will be exploration of recording at four revolutions per minute.

Response equipment in the system will be either a braillewriter or a large type typewriter. Use of a tape recorder in the response system will be explored.

An instruction manual will be written for the system describing its use and emphasizing techniques for study based on learning theory.

This, then, is our progress in listening research to the present. We hope to be able to report further progress to you in 1970.

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"I WAS A 97LB. WEAKLING"

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Books are important to the blind student. They are his way of discovering much about his world that is important to him, and they are also a means of filling leisure hours with a pleasurable pastime. For students with normal vision the local public library can fill these needs, but the blind student must rely primarily on the library of his resident school for three fourths of his learning years. In addition, we now look to school libraries as resource centers--centers capable of furnishing a wide variety of materials to supplement all areas of the curriculum and serving as the nucleus of the educational facility.

Some of you may recall those advertisements of years ago which advertised, "I was a 97 pound weakling: then Charles Atlas helped to make a man out of me." That was KSB a few short years ago--a 97 pound weakling when it came to library materials. A substantial collection of materials in all appropriate media is necessary to fulfill education obligations, and in order for the library at KSB to serve students and faculty better it became obvious to school officials that steps had to be taken to bring the collection and services up to accredited standards.

That was four years ago, and at that time the total collection, comprised of braille and talking books, totaled approximately 900 titles. Today the available collection contains well over 85,000 titles--truly, we are no longer a 97 pound weakling. And, like those who turn to others for help, we, too, turned to someone outside of our own school for assistance in achieving this, to us, spectacular growth.

The story really begins back in 1949 when the Louisville Free

Public Library received a considerable sum of money from the city fathers with which they purchased the needed equipment and materials to establish the first public library owned and operated FM broadcasting station. Ultimately, two stations, WFPK and WFPL were to air programs. These stations, along with the many other activities of the library's Audio-Visual Department, are under the direction and supervision of Miss Dorothy Day, Department Head. With her excellent direction, the Department has built a collection of audio tapes in excess of 80,000 titles, ranging from stories for the primary grades through lectures projected toward the adult level. In addition to these programs (usually referred to as "talk-talk" programs) the Department's collection also contains at least one rendition of each classical music composition listed in the *Schwann Catalog*. The "talk-talk" tapes include commercial recordings which the library has purchased and tapes provided through the NAEB on a sustaining basis. The musical recordings include, along with the commercially purchased recordings, the original recordings of the Louisville Symphony.

This material is available to any library patron even though it is housed in a permanent, "non-circulating" collection and cannot be copied. It is available, of course, by listening on a non-selective basis to either of the two radio stations, but it is also available on a selective basis through a second program of the Audio-Visual Department.

Immediately after the broadcasting stations went on the air the library began to make its audio-visual materials available to any non-profit organization in the city by means of direct telephone lines between the library and the organization. These are "balanced" lines of exceptionally high fidelity. The cost to the organization for this service is the monthly charge which the telephone company makes to its subscribers--the library does not charge for this service.

As plans were being made for the new classroom building for KSB, which was completed in 1963, a fine intercom system was incorporated into those plans, and this equipment has made it possible for each room in the classroom building and for the residential cottages to be tied in with the "wire network" of the Louisville Free Public Library's Audio-Visual Department. One line has been in use since February, 1965 and has averaged 160 hours of listening during the school year of programs lasting 15 to 30 minutes each.

I, as Librarian, either select or assist in the selection of appropriate programs from an extensive catalog. After the selection has been made the faculty member designates the day, hour and room into which the program is to be played. (Programming is normally done on a weekly basis, but there are times when, because of a sudden change in schedule or routine, programs are requested immediately and the library is usually able to oblige us by having them "on the wire" within 10 minutes.)

Normally, the Department's engineers receive our weekly request lists at the Department during the weekend. They then locate the proper tapes or phonorecords and transmit them at the requested times during the following week via the closed circuit. Before the program begins the intercom (to which the program is sent) is connected to the room into which the program is to be relayed.

Initially this service was rather time consuming, but as each faculty member became more familiar with the materials available the operation has become more efficient and the materials used to a better advantage. This program has not only enabled us to produce the right materials at the right time for a unit of study, but it has also been an aid to the junior and senior high school students working on term papers. This use of the wire network by our students may also be of benefit to them after graduation, for if they attend any of the five colleges and universities in Louisville or one of the two theological seminaries, they will already be familiar with the network--indeed, some of the faculty members of these schools will pre-record their lectures for students when they (the faculty members) must be out of town on days during which classes are to meet.

Copyright laws do not permit copying of the programs available at the library, but with this service also available at any of the branches of the Public Library and directly to the school, copying is not necessary.

In summarizing this aspect of our library program at KSB we doubt very much that any other library has been able to grow from 900 titles to over 80,000 titles in less than 5 years and for less than $19.00 per month!

But the assistance of the Public Library does not end with the Audio-Visual Department. The Reference Department staff is always willing and able to give us assistance whenever our still-limited reference collection proves inadequate, and one of the major branches of the Public Library system is located just a short distance from our school and is always willing to lend materials on inter-library loan.

Not forgetting our good neighbor and associates at the American Printing House, the Resource Center, under the direction of Mr. Carl Lappin has given and will, we hope, continue to give us assistance at every turn, assistance which will expand as they expand their services each year. Of special interest to us is their very complete catalog of hand-transcribed children's books and they are always willing and able to assist us in locating specific materials which are needed. Information on large print materials is another aid from this Instructional Materials Reference Center at APH.

One other institutional source can be considered in many communities, Louisville included, and that is the local museum. This may be an historical museum, a museum of natural history, or a museum having a single purpose such as a railroad or aeronautical museum. As we well know, bulletin boards and other printed exhibits which are necessary to promote reading are certainly not very practical in a school for the blind except on a limited basis. They may be practical for general ammouncements, news items, lists and annotations of new books (if brief), but there are few substitutes for pictures.

In an attempt to arouse interest in the children, in reading, we began a program two years ago of borrowing tactual materials from local museums. The museum of the Public Library was the first to allow us to borrow items which the children have found fascinating. The Junior Art Gallery has contributed exhibits from their collection, including a fine exhibit entitled "How a Sculpture Grows" which was created for them by the Sculptor Barney Bright. The Howard National Steamboat Museum has loaned materials to us on the lore of the river and the days of the steamboat.

In addition to these institutional loans many individuals in the community have been generous with their own personal collections ranging from mounted and stuffed animals and birds to a fine collection of Japanese items from a school girl. Other items have included a collection of fossils from a local site along the Ohio River, long famous as an important fossil bed in North America. Each of these exhibits has been gathered together personally or borrowed with the complete understanding of the lender that they were to be touched and handled by the students.

The displays are kept for a period of 3 to 4 weeks on a special table in the library where the children are urged to come at their leisure or as a class group to examine them and to ask questions. They have shown a great deal of interest in these displays and it is hoped that these will be the fore-runners of a permanent collection. However, this would not be a collection which would necessarily be owned or housed in the school or library, but more a collection in the community which could be available at definite times and which the owners would be pleased to lend for this purpose.

It is hoped that these services which have been briefly outlined will help to point out some of the many and varied possibilities which can be found within any community. A little "creative thinking" on our part can produce many, many more. Cooperation from the community can not only aid the educational resources of our schools but they can also foster a good public relations program. Many people are willing to help their fellow man but they need encouragement and guidance in their manner of service. As those "97 pound weaklings" of yesteryear needed the help of a stong "Charles Atlas," so do we need the help of our communities. We can determine what we need, but then we must also determine where, and how, and who can best assist us to fulfill that need.

INSTRUCTIONAL MATERIALS REFERENCE CENTER FOR THE VISUALLY HANDICAPPED

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American Printing House for the Blind
Louisville, Kentucky

In discussing the Instructional Materials Reference Center for the Visually Handicapped, I feel that it is important for you to know a little of the background of the American Printing House for the Blind.

In 1858 the American Printing House for the Blind was founded and it is the oldest national agency for the blind, private or public, in the United States. Today it is by far the largest publishing house for the blind in the world and the only independent institution devoted solely to the publication of literature for the blind and to the development and manufacture of tangible aids for their use. The Printing House is also unique in that for 89 of its 110 years it has been the official schoolbook printery for the blind in the United States.

The Printing House had its origin in the Kentucky School for the Blind which was founded in 1842 as the third state supported school for the blind. In those early days, each school for the blind endeavored to provide its own educational materials. The Trustees at the Kentucky school soon realized the excessive waste of such duplication of effort, and set about establishing a national, non-profit printing house which could meet the combined requirements of all schools for the blind. As a result, the American Printing House for the Blind was chartered as a separate corporation for this purpose, with the members of the then board of the Kentucky School serving as four of the seven original incorporators.

For the first 20 years, the Printing House supplied its materials on a cash basis and through funds raised by several of the states. There was demonstrated the need for a more adequate and permanent source of funds for books and instructional materials for all the schools. In 1878 the American Association of Instructors for the Blind asked Congress for an appropriation for this purpose. As a result, in 1879 Congress passed the act to promote the education of the blind.

On the first Monday in January of each year a registration is taken of all the blind pupils attending public educational institutions of less than college grade throughout the United States, and quota allocations are made to the residential schools and state departments based on this registration. The registration of pupils in grades one through 12 as taken January 1, 1968, was a total of 20,266.

Historically, the growth of the Printing House is reflected in almost direct proportion to growth and expansion of all work for the blind. As the horizons of our educational and other service programs have widened and changed, so have the services of the Printing House expanded and increased with the changing of each era. During the first 20 years of its existence, the total annual budget seldom exceeded $10,000 and the entire staff consisted of 6 to 8 full-time employees. At the present time the operating budget is over $3,000,000 and the Printing House employs a staff of some 400 full-time and 40 part-time employees.

Obtaining appropriate materials for education of visually handicapped children is a problem of long standing with educators. The total number of such children is relatively small and they are widely scattered amoung a variety of educational programs. As a result, only small numbers of textbooks of any given titles are required and only small numbers of an educational aid are needed, making commercial manufacture of most of these items impractical. While many commercial materials are useful for education of the visually handicapped, the task of discovering and/or adapting these materials is often great. Since its establishment, the Printing House has served as a principal source of many of the materials required. The local efforts are often duplicative and wasteful of effort. Of even greater importance is the fact that local solutions to materials problems are rarely communicated above the local level. It is our hope to locate items not only manufactured by commercial firms but also those devised by teachers, and through dissemination of this information, encourage wider use of these valuable materials.

The functions of the materials reference center are several and will serve to overcome some of the problems mentioned.

First, the center provides a single national source of information about the availability of educational materials for the visually handicapped from all sources. Second, the center provides a program for the development of additional materials when needed. Third, the center provides a means of formally communicating and demonstrating the availability and methods of use of such materials for educational programs and teacher training facilities.

The present structure of the American Printing House includes such sub-units as the editorial department, data processing department, recording department, educational research department and production department. The center itself is divided into three sub-units with the following functions: 1. Data Storage and Dissemination. 2. Materials Development. 3. Materials Evaluation. All these units are distinct but will overlap somewhat in function to attain the objectives of the center. The center exists within the confines of an institution that has the reputation for providing services far exceeding its role as a material producer, which makes it a focal point for inquiries regarding problems of all kinds relative to education of the visually handicapped.

Primary goals and objectives of the Instructional Materials Center are as follows:

1. To establish and maintain a central catalog of information about curricular and instructional materials for visually handicapped children.

2. To supply upon requests lists and descriptions of materials available for specific purposes together with information concerning their sources, cost and usefulness.

3. To discover, to describe and evaluate materials already developed locally or commercially for use in educating visually handicapped children.

4. To develop new materials or adapt available materials and evaluate their usefulness.

5. To develop manuals of sets of instructions describing how the special materials for visually handicapped children should be used.

6. To provide a steady flow of information concerning available materials to the field through the publication of a news letter and frequent articles in appropriate periodicals.

7. To provide exhibits, lectures and demonstrations on educational materials to professional meetings, teacher training programs and school systems.

8. To evaluate the usefulness of a materials center in the field of education for the visually handicapped.

The services currently being offered are those services of the central catalog of volunteer transcribed materials. The central catalog of volunteer produced textbooks and children's literature books which is maintained in card file form has become a valuable source of information for the benefit of transcribers, school administrators, teachers, librarians, students, parents and all workers for the blind who need material in braille, large type, disc or tape recorded form.

From rather modest beginnings as a list of hand transcribed braille textbooks available for loan or reproduction by the thermoform process, the catalog has grown so rapidly that we hate to predict the eventual size of these listings. The file now contains some 30,000 completed titles and 5,000 titles in process, covering books in braille, large type, tape and disc recorded form. The daily growth of the listing is caused primarily by two factors: The steady growth of increased productivity of volunteer transcribing groups all over the country, and more efficient and conscientious reporting of work completed and in process.

The purpose of the central catalog is twofold: 1. To make possible a single service which will coordinate the reporting efforts of all agencies, groups and individuals producing literature for the blind on a volunteer basis and at the same time make possible a single point of reference for schools, students and blind readers needing a particular educational title. 2. Another purpose of this catalog is to provide for the clearance and recording of permissions from ink print publishers through blanket agreements which publishers have extended.

You may ask how a teacher, school administrator or interested person might use this file. Our first request is that people check all available catalogues of publishers of materials for the blind, and if no listing is found from any of those sources in the form desired, an inquiry should be made at the Printing House as to whether it is available elsewhere, always specifying the exact title, author, publisher, copyright date and grade level. School grade level is most important for elementary school textbook titles. The media needed is also important. All inquiries receive immediate attention, and if the title has been previously transcribed the Printing House will provide the address of the depository or if the book is currently being transcribed somewhere the name and address of the transcribing group will be provided. A few minutes spent in trying to locate a book can save many many hours of unnecessary transcribing and also make full use of any single transcription. Inquiry can be made as to whether the book is available for loan or copying.

The future plans of the Instructional Materials Center can best be summarized by outlining the sequence of development that will occur in the next three years:

Accomplishments to date are as follows:

1. Remodeling of space required for the center
2. Developing a catalog of currently available materials (educational aids)
3. Search for materials commercially or locally produced
4. Begin informal dissemination of information through replies to inquiries.
5. Development of new materials
6. Field testing of new materials
7. Displays of materials in the Center and at Educational Meetings

Plans for the next year include:

1. Begin writing user manuals
2. Demonstrations on new educational aids
3. Search out and develop more new aids, i.e. science kit, weights and measures kits, math aids.

The development group has the responsibility for the development of additional aids. This includes development of ideas put forth by educators and bringing locally developed aids to production stage and developing adaptations of commercially available materials so that these could be used by visually handicapped children. The evaluation operation is responsible for setting up evaluations of materials through a series of review panels and conducting field tests with materials. In addition, this group will be responsible for developing user manuals for educational aids.

A final report giving a detailed description of the center's operations will be sent to all state departments of education, residential schools for the visually handicapped, volunteer groups making materials for the visually handicapped, universities and colleges having special education programs. Continuing dissemination of information will be given to heads of all state departments and residential schools dealing with education of visually handicapped children or ex-officio trustes of the Printing House. The ultimate purpose of this center is to provide educators of the visually handicapped and related personnel with ready references for valid materials and information pertaining to the education of visually handicapped children.

It is the sincere desire of the personnel at the Printing House to give even greater service through this materials center. We hope that you will make it a point to visit the Printing House and observe some of the activities carried on there. Any ideas that you as teachers and administrators have concerning the education of the visually handicapped will be appreciated.

EDUCATIONAL AGENCY CO-OPERATION WITHIN STATE OR PROVINCE

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California provides education for visually impaired children at the California School for the Blind in Berkeley and in many local public schools throughout the State. In 1967 the total school population in California for grades kindergarten through fourteen was 4,519,371. Of this number special school services were provided to 2,481 blind and partially seeing students. In addition 143 blind and 14 deaf-blind students were enrolled in the California School for the Blind. Nine county superintendents and 69 school districts operated resource or itinerant teacher programs for the visually impaired. These programs were served by 215 teachers and 68 employed transcribers.

As early as 1957 it was realized that materials in the various media would be needed in quantity to serve these students so representatives from San Francisco State College, the California School for the Blind, the then-known transcribing groups and the State Department of Education met and later formed a group known as the California Transcribers and Educators of the Visually Handicapped, Inc. CTEVH meets annually for a two day conference planned jointly by the volunteer transcribers and school personnel. The public school programs are very dependent on the outstanding services provided by the volunteer transcribers.

In 1947 a small group of blind people and various agency representatives felt it desirable to plan to meet routinely to discuss common problems. In 1951 through legislation it became possible for representatives from health, education and welfare to meet four times annually. Later when rehabilitation became a separate department it also sent a representative. This Co-ordinating Committee on State Services for the Blind is composed of employees close to the problems of the field. It annually prepares a report of agency activities to be submitted to the Co-ordinating Council which is composed of directors of each agency. The Council reviews the report and submits it to the President of the Senate and Speaker of the Assembly. The Council also meets on a quarterly basis.

This year following several discussions in the Co-ordinating Committee the state library requested that a survey be made of library services for the blind. This resulted in a study by the Dean of the School of Librarianship of Berkeley. The study has just been reviewed by the committee and plans will be made for implementation of feasible portions.

Knowing that the rubella epidemic would probably result in a rather large number of multihandicapped children a five day institute covering all areas of special education was sponsored last fall by the State Department of Education with federal monies. It was felt this would alert key school personnel to the seriousness of the problem. Later in the year with federal funds from Title I of ESEA, two studies were initiated by the State Department of Education. Dr. Berthold Lowenfeld, retired Superintendent of the California School for the Blind, completed in May, 1968, a report on Multihandicapped Blind and Deaf-Blind Children in California. A similar report on Multihandicapped Deaf Children in California was completed at the same time by Dr. Donald R. Calvert, Executive Director of the San Francisco Hearing and Speech Center - a private organization. After reviewing the reports the Assistant Chief of Division of Special Schools and Services requested a meeting of the superintendents of the five state residential schools and the four consultants serving deaf and hard of hearing and visually handicapped children. The problems and recommendations cited in the reports were reviewed and discussed.

San Francisco State College, realizing the need for specially trained teachers following the rubella epidemic, requested a grant for teacher education in the area of the deaf-blind. With the assistance of the two teacher education centers in the state, the State Department of Education is working toward the completion of a teacher credential in the area of the deaf-blind.

Late this spring the California School for the Blind cooperated with two private agencies and held two preschool institutes - one in Los Angeles and one in Berkeley. The cooperating agencies were the Center for Blind Children and Variety Club Blind Babies Foundation. Both have provided preschool services to parents of blind children for a number of years.

Another example of co-operation has been in the area of mobility instruction. In 1966 legislation was enacted making it possible for public schools and the State Department of Rehabilitation to employ mobility instructors jointly.

One of the most helpful of co-operative efforts took place three years ago when the California School for the Blind invited the two Consultants in the area of the Visually Handicapped to serve on the Evaluation and Placement Committee. During the evaluation representatives from the local schools are invited to participate with the committee when a child from their district is being considered for placement or dismissal. This has proven most beneficial to all concerned.

In summary this has been an attempt to indicate briefly the numbers of visually impaired children being served in California and various types of activities in which the State Department of Education has participated on a co-operative basis.

SEX EDUCATION IN SCHOOLS - A RESEARCH PROGRAM

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Sex Education in a Changing World

Wide-ranging interest in sex education. No one need be told that sex education, whether in the home, the school, under church auspices, or among teenage groups themselves, has attracted a great deal of attention in the last few years particularly, but extending as far back as the early 1950's. As early as 1952, under the auspices of the Diocese of Detroit, Michigan, a group interested in family life education formed teams of lay men and women, clergymen, physicians, social workers, psychologists, and other professionals to conduct lectures and discussions with parents, in groups of 50 to 600, on how to give sex instruction to their children. This large scale, pioneering effort was not copied in many other places, but since that time programs of sex education have mushroomed in various parts of the United States and Canada in an effort to help young people with the problem of sexual growth and development, and to combat, or at least to prepare them for, trends in our society that can be detrimental to healthy sexual maturation and to a wholesome family life.

The interest in and the need for sex education are prompted by many happenings and trends in our rapidly changing and often disturbing world. We need not go into these facets of change to any great extent, since they are well known to all; but in order to set the stage for what we have to say later regarding the nature and the rationale of sex education, we would like to indicate what we believe to be the principal characteristics of contemporary thinking, and of society in general, that have altered the nature of the sex problem and the need for sex education to an important degree, so that the problem of sex education has different dimensions than it had ten or twenty years ago. For these reasons the sexual process, psychosexual development, sexual behavior and mores, and sex education itself have to be carefully researched, redefined in terms of changing social patterns, and then integrated into a program of interpretation and action that will meet the needs of young people as they push their way to maturity and family life, at the same time the demands of a dynamically changing society must be met effectively. We are all aware, this is not an easy task. It is beset with many dangers and pitfalls, with conflicts and disagreements, with prejudices and outmoded thinking.

1. The changing sex climate

For these reasons, it is important to take a sharp look at some pertinent characteristics of a changing society. The first item is the changing sex climate in America and in many countries of Europe and Asia. We are not referring here specifically to changes in sex behavior which have been researched pretty thoroughly by Kinsey and others who have followed him; but rather to the changing mores, attitudes, and ideals that characterize the contemporary world, and particularly the world of the adolescent and the young adult. It is this newer sexual Weltanschauung, rather than pornographic books and movies, psychoanalysis or free love, that have stimulated the cult of sexual freedom, sex on the campus, permissiveness with respect to premarital sexual behavior, and a somewhat cavalier attitude found in many sections of the population to extra-curricular sex among married persons. It is not always easy to tell whether the horse or the cart comes first, but certainly the history of social trends and intellectual changes in America indicated that the sexual problem begins more often above the neck than it does below the waist. In other words, premarital and extramarital sex are symptoms of a changing sex climate, rather than a cause.

In similar vein, the widespread increase in sexual freedom can be interpreted along whatever dimension one chooses, including the increase in and devotion to breast fetishism; unbridled feminism; topless dresses and mini-micro skirts; bikinis and nudist therapy; availability and refinement of pornographic material; liberalization of attitudes toward homosexuality as well as other perversions; development of tolerance toward highly sexualized books, movies, and plays; and even the sexualizing of toys for young children, and post cards for adults. All these phenomena, and many others, are more in the nature of symptoms of a changing sexual climate, than a cause of sexual misbehavior. If these things are undesirable from a social point of view, the remedy is not in vice squads, or teenage curfews, but in changing the climate of sexuality through education, discussion, publication, and propaganda.

2. The changing moral-religious climate

The changes in our sexual mores, attitudes, and ideals are mirrored in and reflect to a great extent the changing climate of the moral and religious convictions of contemporary society. It is generally agreed that the separation of moral values and standards from the objective concept of man as an intrinsically moral being, and the resulting development of situation ethics - to take the most glaring examples - has contributed a great deal to the undermining of an objective sexual morality and to the stimulation of sexual freedom whether in thought or in behavior. This growing looseness of moral controls is evidenced in the increased incidence of delinquency and crime, commitment to self-destructive drugs, and increase in alcholism among youth, just as clearly as in the violation of traditional sexual codes.

If to this disturbing, if not frightening, picture of the mores and habits of contemporary youth we add the influence of deep and pervasive changes in religion, including attitudial changes toward birth control, abortion, reduction of religious authority, belief in the death of God, and wholesale defections from religious commitment, we can easily see why sexual libertinism has had such a healthy growth in the past twenty years. The traditional command of the Decalogue "Thou shalt not commit adultery," has been altered in the minds of many young persons to read, "Thou shalt not commit fornication unless thou art in love and the situation justifies it."

3. The changing family pattern

To this picture of the changing climate for sex and sex education, we should add the disruptive effect of changing family patterns. Whenever parents are in conflict, separated, divorced, or married to other partners in a succession of relationships that were once strictly forbidden, it is difficult to preach sexual continence, legitimacy, or control. And it is even more difficult to create a psychological climate conducive to healthy and mature values, attitudes, principles, and practices regarding sex. Where there is little or no integral family life there can be little effective instruction. Apart from other cogent reasons, this is certainly one of the strongest arguments for transferring sex education from the home, where it traditionally belonged, to the school where a more effective job can be done.

None of these statements regarding the changing sex climate, sexual freedom, situation ethics, or the decline in religious influence should be taken as value judgments relative to sex behavior or sex attitudes. The intent here is not to evaluate the attitudes or behavior of young people, or of those who are older and already married, but simply to indicate why there is such widespread interest and concern for effective sex education programs.

In addition to these concerns, several others disturb a great many persons interested in the welfare of young people and of society. Two of these stand out prominently: the growing incidence of premarital pregnancies, and the soaring rate of venereal disease, including both syphilis and gonorrhea. The first of these statistics will undoubtedly be affected and possibly lowered by the widespread application of newer techniques of pregnancy control; and in the not too distant future, according to recent opinion in medical circles, we may expect that the dread disease of syphilis may be brought under control and eventually eliminated by the discovery of a vaccine that will prevent syphilitic infection. Nevertheless, an effective program of sex education must be directed in part toward the reduction of both of these unfortunate and sometimes destructive social phenomena. It may well be that these social stigmas will be eliminated in the foreseeable future, but at present we must realistically consider the possibility that large numbers of young people will still become involved in the stigma of unmarried motherhood, that children will be born without parents to care for them and to provide the security of family life, and that many youngsters will be threatened and even destroyed by the ravages of venereal disease.

Sex Education Research in Massachusetts

During the past four years the Commonwealth of Massachusetts has financially supported a three-phase research program directed toward a broader comprehension of the need for sex education in both the public and parochial schools of the Commonwealth. The first phase of this study was a carefully designed investigation of the effectiveness of films, depicting the physical outcomes of venereal disease infection, on the knowledge and attitudes of high school students in six carefully selected parochial schools in the Boston, Massachusetts area. Six hundred students, evenly distributed among boys and girls, were singled out for the investigation, which utilized three well-known films as the focal point of study. The research design was relatively simple, involving the presentation of the films, administration of a knowledge and attitude questionnaire based on the film presentation, and a follow-up study six months later, with the same questionnaire, to determine the continuing effects of film presentation. While the results were not conclusive, the study did indicate that students in the senior year of high school can be positively influenced by exposure to visual material that emphasizes the threat of venereal disease infection. At the present time, there is a follow-up study being conducted to determine the efficacy of such material after a lapse of several years.

The second phase of this program, also supported by a grant from the Commonwealth of Massachusetts, involved research into the problem of sex education for venereal disease control. Out of this research we developed a manual of some 200 pages for teachers at the junior high school level. This manual was evaluated in a one-day workshop held during July of 1967 at Boston College, to which 60 junior high school teachers, principals, and superintendents of schools, as well as several experts in venereal disease control, were invited.

The third phase of this research into sex education is going on at the present time and will eventuate in the publication of a manual on sex education for teachers at the fifth and sixth grade levels. Preliminary to the development of this manual a questionnaire was circulated among 105 selected public high schools in the State of Massachusetts and all of the parochial schools in Massachusetts relative to the existence and type of sex education program now available to students. The results of this questionnaire will be used to determine both the content and the format of the manual. This research project will be completed by January 1, 1969, and will be published in July of the same year.

The Why of Sex Education

The changing sex climate creates a demand for adequate sex instruction but it is even more important to recognize the needs within the young person for knowledge, attitudes, standards, and controls related to the phenomena of human development.

It is the developmental process, the ineluctible movement toward maturity and adulthood and all the responsibilities that these terms imply, that answers the question: Why sex education? This developmental process also indicates the intrinsic relationship between the WHY of sex education and the HOW. Such questions as what? how much? when? by whom? under what circumstances? can be answered only in terms of the developmental needs, characteristics, and patterns of the growing youngster, and the environmental conditions and interpersonal relationships within which sex instruction becomes a part of the total process of personality formation. It is these principles which have guided the research teams in the development of our sex education manuals. It is our opinion that every sex education project should be guided by a carefully formulated philosophy of sex education.

Why is sex education important?

In view of the millions of words that have been written, the hundreds of institutes and workshops offered all over this continent, and in view of the lectures, radio programs, and television dialogues that have literally flooded our senses with facts and figures, appeals and warnings, it might seem a bit naive to ask the question: Why is sex education important? One of the most important reasons, and one easily overlooked, is that there is so little of it. We all know that parents are distressingly delinquent in this regard, that the Churches offer programs that fall far short of meeting the needs of young people. This of course is more a statistical than a philosophical or educational answer, - sex education programs are needed because there are so few good ones available. But what is there about sexual development, sexual experience, sexual relationships or sexual behavior that makes sex education so important? What is there about human personality and interpersonal relationships that make it important? What is there about adulthood and family life that make it important? Is sex education necessary to safeguard the moral, religious, spiritual, and social welfare of the adolescent and the young adult? Is sex basically a moral question? or is it a pragmatic one which seeks to avoid the pitfalls of unwanted pregnancy, venereal disease, or illicit relationships? Is sex sui generis or is it inseparably bound up with love, commitment, and fidelity?

These are deeply serious questions that should be taken into account in the formulation of a philosophy of sex education as well as the development of a sex education program. Those who would link sex with morality and religion, and interpret it as sinful outside of the marital relationship, tend strongly to regard sex education as the responsibility and the prerogative of the parents. Conversely, those who regard sex and its development as natural phenomena will tend to see it as amenable to the educational process, in much the same way that intellectual, emotional, and social development are natural phenomena to be guided, enriched, and perfected by the educational process. In a very real sense, it can be argued that unless sex is divorced from morality, and the constant threat of sinfulness, guilt, shame, and self-rejection, some developmental harm must inevitably result. We might express it this way: Unless we demoralize sex we are very likely to demoralize the young person. This aphorism is not offered as a rationalization for premarital or extramarital sex behavior, but as a strong reminder that the reactions to sex behavior and relationships can cause considerable psychological damage unless sex education helps to create safeguards against it. Our philosophy of sex education must be aimed at integrating the reality and the phenomena of sex into the mainstream of human events, human relationships, human characteristics, and human responsibilities, for self and others, in such a way as to create a mature sexual personality that can assume the mantle of marriage and of family life in an effective and productive manner.

For the young person, sexual behavior should be divorced from sinfulness but not from wrongdoing. It should be united to love, but should not be rationalized as an instrument of love. It should be integrated with moral principles but not distorted or destroyed by them. It should be exploited as an instrument of growth but not as a weapon for self-aggrandizement. It should be used for true self-realization but not for false self-identity. As teachers, we should instruct young people in the promises of psychosexual fulfillment without minimizing the potential threat of sexual indulgence to the physical, psychological, moral, and social well-being of the personality. Like hunger and thirst, sex is a powerful drive. Used well and wisely, these drives can contribute a great deal to the welfare, growth and self-realization of the human person; used poorly, any one of them can lead to its destruction. It is the failure to integrate sex into a healthy philosophy of action that can bring about a person's downfall rather than self-expression. These are the things a young person must come to know, and principally through the educational process.

The HOW of Sex Education

Divergent viewpoints on sex education. For countless years it was assumed, and argued vociferously, that sex education belonged in the home and was the sacred prerogative of the parents. Even as late as a week ago echoes of this ancient doctrine could be heard rumbling out of Washington, D.C. where an interfaith meeting of prominent educators reaffirmed this sacred trust. No one would argue against the principle that parents have a deep and inescapable obligation to help their children move from sexual immaturity to psychosexual and psychosocial maturity. But, unfortunately, parents have often abdicated this responsibility with small regard for either their obligation or for the welfare of their children. All of the statistics show conclusively that not much more than 15 percent of parents fulfill this responsibility to their children.

Society in its own way has condoned this abdication. It has tacitly approved divorce and separation, and thus put its stamp of approval on the breakup of the family whereby sex education becomes impossible. It has fostered the ideal of public education for all to the point where the role of the family has diminished to a vanishing point. It has encouraged the Montessori system of education, kindergarten classes, nursery schools, and baby-sitting operations that have all but removed the child from the home at all stages of development. It has encouraged the ideal of the working mother who obviously cannot be at home to instruct her children at the same time that she is in the market place helping to support the family or to create greater affluence. It has invested the teacher with an aura of omnipotence in all things, so that in truth she (or he) becomes a surrogate parent. It has provided classrooms and laboratories, tools and equipment, scholarship monies and educational programs for countless persons striving to enter the professional fields of teaching and counseling so that a plethora of obligations, invested by nature in the parents, can be transferred to the academic situation. Expressed in the briefest form, parents and society have collaborated in a program of abdication that has deprived the home of much of its formative powers and have taken away to a large extent its educative responsibilities. Thus, along with many other formative privileges, the school has had to assume responsibility for the sex education of the child.

The teacher and the expert. This interpretation of the shifting of responsibility for the education of the child in matters of psychosexual development does not necessarily mean that the responsibility has to be assumed by the classroom teacher. This is done perhaps in the majority of school systems where sex education is available, but that does not mean it is the most effective procedure. In some school systems a panel of experts has been formed that travels from one school to another and presents in systematic form, with the help of selected educational materials, the information each child needs to have in order to cope with psychosexual development at his particular age level. This method has the advantage of exploiting expertise in the areas of sexual development, behavior, and relationships, but obviously at the expense of formalizing an educational process that needs the warmth, understanding, acceptance, and friendliness of the ordinary classroom teacher, who can function more effectively as a surrogate parent than can a team of experts.

The danger of sex education by experts resides in the very fact that they are experts. Who wants to go to a physician or to a psychologist to find out if soul-kissing is allowable or if vaginal stimulation will produce pregnancy? For all of our current-day objectivity, sex is still a deeply personal, intimate, and even sacred aspect of life that many young boys and girls do not wish to share with strangers. This is a problem that needs a great deal of exploration and testing. I do not believe that at the present time we have any definitive answers to offer to the teaching profession regarding the efficacy of one system of presentation as against another. However, we can certainly agree that teachers selected for the sex education of children should be chosen with the utmost care in terms of knowledge, teaching skills, academic preparation, and personality factors that will come together in the teacher-student relationship so as to have the most wholesome and productive influence on the boys and girls who hunger for knowledge and development.

The determinants of sex education. Finally, we come to an extremely broad and complex question that has been asked many times and answered in many different ways. What are the determinants of effective sex education? At what age level should we begin, whether as parents or as teachers? When is the child ready for certain types of information? How should it be presented? Are girls different from boys? Should the sexes be segregated for purposes of sex instruction? Is verbal presentation enough? Should auxiliary materials, such as slides, films, and charts be used to illustrate and embellish verbal presentation? What do children of different age levels want to know? What do they need to know? How can we distinguish the primary from the secondary aims of sex education?

These are only a few of the questions that are suggested by the challenge of an effective sex education program. Time does not permit an excursion into this complex area; but at least we can formulate the questions and then set about determining the answers through discussion, exploration, and research. Certainly as we have already indicated, there is ample literature and other materials available for the energetic teacher or scholar who wants to find the answers to these questions. Sex education is a broad field, a fascinating field, a challenging field, and a rewarding one. If we add up the countless hours of anguish, of guilt and shame, of unnumbered pregnancies, of countless unhappy marriages, and the growing number of victims of venereal disease, that could have been prevented by an adequate program of sex education, then certainly we will become acutely aware of what these programs can mean to our growing children and our maturing adolescents.

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PRESIDENT'S REPORT

Stewart E. Armstrong, Superintendent

Ontario School for the Blind
Brantford, Ontario, Canada

Eight years ago in Donelson, Tennessee, my election as a director provided the opportunity and privilege of service to AAIB. There followed a term as second vice-president highlighted by the arrival in Watertown of the programs, printed in Canada, in time to be given out as souvenirs at the conference adjournment. Two years as your first vice-president were climaxed in Salt Lake City where I was greatly honoured by being named your president.

The years, particularly these last two, have flown by all too quickly and now it is my very real pleasure to welcome a most encouragingly large registration of our membership to the third conference on Canadian soil in our 105 year history of fruitful existence.

Although history can be interesting, long reports can be tedious but I feel a responsibility to tell you some of what has been accomplished in the biennium just ending and a desire to give some richly deserved credits.

Perhaps the most exciting event of these last two years in terms of the future development of our Association was the implementation of board policy to plan and conduct Regional Conferences. November 10 and 11, 1967, 300 registered at Harrisburg and 97 at Philadelphia for concurrent regional conferences. All persons interested in the education of the visually handicapped in the northeastern United States and Ontario were invited to Harrisburg while our houseparents centered their activities at the Overbrook School. Congratulations and appreciation are due Elinor Long, Superintendent David Olsen, Vice-President Bill English and Executive Secretary Paul Thompson. These four are eligible now to join the distinguished list of members who have pioneered with new ideas. Our first regional conference was an unqualified success and others are being planned for the off-convention years.

I recognize that my nomination for the title "High-light of the Biennium" is open to challenge and hasten to offer equal status to another board policy which was implemented last year. To Northern Illinois University goes the honour of having the first AAIB Chapter aptly named Alpha Chapter. Hard on the heels of this pioneer movement within our Association was the formation of the Utah Chapter in Ogden, Utah - our second. Several others are just about ready to make announcements. To these two and those which follow - congratulations and happy progress!

Having directed your attention to a high point selected from twenty-four busy months and immediately indicating another innovation to place beside it, you won't be surprised if I now move these two over to share the spot-light with a third. In late June, 1967, the Board of the International Journal for the Education of the Blind arranged to dissolve its articles of incorporation and "The Journal" became "Our Journal". On July 1, 1967, your Board appointed a Publications Board with many responsibilities - the chief one being the publication of the Journal. This very fine publication, which many of you always considered was ours, now really is. Our thanks to our Publications Board - pioneers also if you wish - and to the new editor, Dr. Natalie Barraga, and may you all pledge your support and encouragement.

Brief mention, out of all proportion to the work done and the results accomplished, must be made of Career Days, jointly sponsored by AAIB and AFB, held at Overbrook in Philadelphia, March, 1967, in Nebraska City, April, 1967, and in Ogden, Utah, October, 1967.

Arising seemingly as a natural outgrowth of the series of Career Days we have sponsored is the Guidance Counsellors' Institute planned for November 11 - 15 in Austin, Texas. I would assure you that in this case appearances are certainly deceiving. This Institute is the culmination of ideas which came out of our AAIB Guidance Workshop. These were carefully nurtured by Paul Thompson and co-operatively and soundly developed. We see in this project, which as Rehabilitation Services Administration sponsorship, the beginning of an on-going program with ever-widening benefits for our visually handicapped youth.

Earlier this morning you were asked to approve the report of the

Braille Authority. I would draw attention to the fact that as of January 1, 1967, the Braille Authority, appointed jointly by the presidents of AAIB and AAWB, was increased in membership from three to five and, as of January 1, 1968, an Advisory Council to the Braille Authority, with a membership of twelve respected leaders and educators in our field, was appointed by the two presidents with the approval of their respective boards. It is our belief that these two steps will have far-reaching effects. We have strengthened the Braille Authority and the Advisory Council will give breadth, depth and significance to its work.

As your president, and by board direction, I appointed an Association Name Change Study Committee charged with the responsibility of evaluating previous studies, examining current trends and developments in our field, sampling membership opinion and bringing a recommendation to the board. Again at board direction I advised our membership in a letter dated February 5, 1968, that after careful deliberation this much studied and oft debated topic was to be brought to a focus by means of a resolution to be proposed by your Board of Directors at the Toronto Conference June, 1968, which would amend our constitution and by-laws to change the name of our Association to ASSOCIATION FOR EDUCATION OF THE VISUALLY HANDICAPPED - A.E.V.H. You will be asked to vote on this resolution on Wednesday, June 26. I was encouraged by the fact that all but one of the letters received in response to this "notice of resolution" expressed full support both for the idea of a name change and for the name suggested. With the vote still to be taken I cannot report a name change but only that your board has studied the matter thoroughly, acted as it deemed best, and now requests your support.

NOTE: The resolution recommended by the Board was accepted after much debate and our Association has a new name!

You are all familiar by now with the mailings which you receive from time to time from the Library of Congress. These are part of a new service from our Washington office and are a by-product of a cooperative undertaking between our Executive Secretary's office and the Library of Congress and our members benefit without cost to AAIB.

Your Board has authorized that a study be made of our certification requirements, procedures and policies for the Certification of teachers and houseparents to be sure that these are keeping pace with changing conditions. It is also expected that the studies which have been made by our Certification Committee chaired by

Evelyn Rex will be continued to their completion and we have certification for teachers of orientation and mobility.

But even as I share with you what I feel are the outstanding accomplishments of the biennium, I must be fair and point out the very serious problems which face our organization. Over the years the record will show that our membership and the inspired leadership of the past have faced lean years and awesome challenge with courage and determination. I am confident that with your support the Board to be elected this week will be equal to the task. But make no mistake about it - grave decisions must be made and the active encouragement of all who have faith in our cause is essential.

Each and every member will recall my letter of May 7, 1968 to the membership advising of the resignation of R. Paul Thompson who had been our executive-secretary since November, 1965. Although Mr. Thompson's resignation was effective June 1 his new employers in the U.S. Office of Education granted him permission to be with us for this conference June 22 - 27. While every effort has been and is being made to secure a successor for Mr. Thompson we must proceed carefully and not move hastily. Even as our conference proceeds the solution to this situation is being sought. We feel very fortunate in that Mr. Isaac Clayton of the staff of the Maryland School for the Blind was willing to enter our employ June 10 as Acting Executive-Secretary to keep our office open and our services functioning. I regret very much that in relinquishing my presidency this week I also hand over an unsolved problem of such a magnitude.

I must not end my report without a reference to finances. We have never been a wealthy organization but our budget problems have reached a peak of acuteness this year. While there is real cause for concern we can see a balanced budget for next year but I would request most earnestly that each and every one of you consider yourself a part of the membership committee and begin right after this conference to look for prospective members and then actively promote membership. Only by increasing our membership and our sources of revenue will we be able to increase our services. We can, if we but will.

These have been two busy, and I feel productive, years for AAIB. I am deeply grateful for the opportunities I have had. Whatever I have put into the organization in terms of effort and leadership has been returned manyfold in many very real yet intangible ways. Whatever accomplishments there have been are due to the unstinting efforts of Paul Thompson, the constant support of the entire board and in many ways, but particularly with this conference, to the loyalty and industry of our own Brantford staff. My heartfelt thanks to all.

BRAILLE AUTHORITY REPORT 1968

Bernard M. Krebs, Chairman

The Jewish Guild for the Blind
New York, N.Y.

The organizational meeting of the Advisory Council to the Braille Authority was held in New York February 26th and 27th. The Council of twelve members and two representatives of the Authority held preliminary discussions relating to the scope of their respective duties and responsibilities.

Among the matters covered were: a review of the history and goals of the Authority; the specific responsibilities of the Council and Authority; the funding of both the Council and the Authority; the need and scheduling for research; the requirements for improved techniques for learning braille; the necessity for simplified instruction manuals for technical braille codes; the role of educators in testing newly developed braille codes; the funding for the publication of new or revised braille codes; and, the determination of the channels through which the general field of work for the blind can be kept informed as to the functions and activities of the Braille Authority.

The duties and responsibilities of the Braille Authority were defined to include: the development of braille codes; the standardization of their use; the evaluation of their efficiency; the study of their revision or refinement; and, the arrangement for their publication and dissemination.

The Council recommended the consideration and investigation of the following areas of research: the development of an adequate instruction manual for the teaching of braille to the adult blind; the preparation of a manual for the grade by grade introduction to the symbols of the Mathematics Code; the investigation of the value of modern technical devices in coping with educational procedures; the exploration of the possible use of typesetters' tapes for braille output; and, the study of techniques to make braille books and publications more attractive and legible. With so eminent a personage as Dr. Lowenfeld as Chairman, the Advisory Council whose membership is comprised of such prominent educators and leaders in service to the blind will assuredly add breadth and depth to the work and significance of the Braille Authority.

To carry forward the programming of these projects, a coordinating committee was established consisting of the elected officers of the Advisory Council: Dr. Berthold Lowenfeld, Chairman; Dr. Geraldine Scholl, Vice-Chairman; and Dr. Natalie C. Barraga, Secretary; and the officers of the Braille Authority: Mr. Bernard M. Krebs, Chairman; Mrs. Maxine B. Dorf, Co-Chairman; and Miss Marjorie S. Hooper, Secretary-Treasurer. This committee is to undertake a study of the respective duties, responsibilities, and functions of both the Council and the Authority.

Since adequate financing is essential to the functioning of the Advisory Council, the Braille Authority, and its Advisory Committees of experts and specialists, a Finance Committee of the Council was elected consisting of Dr. M. Robert Barnett, Chairman, Mr. Robert S. Bray, Dr. Douglas C. MacFarland, and Miss Josephine L. Taylor. Funds and grants are to be sought for the expense of all committees, for code publications, and for research projects.

During the past year, the Braille Authority has found it necessary to restrict its activities to the most pressing problems within the scope of its responsibilities. The limitation of service is due to inadequate funding. Despite the fact that the travel and living expenses of most members of the Authority and its Advisory Committees are underwritten by their employing agencies, an additional expenditure of more than $2,600.00 is currently required for unsponsored members and incidental expenses. With a total grant of only $1,000.00 from AAIB and AAWB and a carry-over in its treasury of $363.39, the Authority has confined its efforts and allotted its funds to the further development of the Mathematics Code while the work of other Advisory Committees has been kept in abeyance.

In developing the current Mathematics Code, primary emphasis was laid upon the inclusion of braille equivalents for the great variety of ink-print symbols required by transcribers in the production of braille texts. The rules were so designed that an individual with limited knowledge of mathematics could produce an accurate transcription of the ink-print copy. Because of the emphasis upon the needs of the transcriber, some rules, braille combinations, and symbols were found to be confusing to the braille reader and restricted the easy flow of information. The Authority and its Advisory Mathematics Committee are engaged in revising this code in order to increase its legibility and clarity for the braille reader without vitally disturbing its faithfulness to the ink-print presentation.

Three revisions are being recommended for the literary code.

1. In addition to the entry words of the standard collegiate dictionary, the use of contractions is to be extended to the common terms of a particular subject, such as botany, medicine, music, etc., if they are listed in a glossary or if their meaning is explained as they originally appear in the text.

2. Part-word contractions should be used rather liberally in dialect to carry out the style and flavor of speech.

3. The technique of including note in an indented form after the paragraph to which they refer has proven very effective in textbooks. The same format is recommended for literary texts so that a note can be read or skipped at will without the necessity of searching at the back of the volume.

The prospect for the development of a braille code for chemistry is at long last in view. It is a pleasure to report that the Seeing Eye Foundation has graciously provided a grant to the American Printing House for the Blind to carry forward this important project.

AMENDMENTS TO THE CONSTITUTION AND BY-LAWS OF THE AAIB

The following amendments to the Constitution and By-laws of the American Association of Instructors of the Blind were adopted by the Conference, June 26, 1968:

Article I of the Constitution was amended to read as follows: "This Association shall be known as the 'Association for Education of the Visually Handicapped'."

Section V of the By-Laws was amended to include the following addition: "h. Long-range Planning Committee: This committee will develop recommendations relating to future policies, programs, and activities of the association."

Section 9 of the By-Laws was amended to read as follows: "9. A general budget shall be adopted by the Board of Directors at its annual meeting. The budget shall be administered by the Executive Secretary with the approval of the Secretary-Treasurer. The Secretary-Treasurer shall report on the physical operations of the Association at the biennial conference."

NECROLOGY REPORT, 1968

Francis M. Andrews

Superintendent, Retired,
Maryland School for the Blind

Once more we pause to pay homage to those members and former members of this Association who, in many instances, gave a great portion of their lives for the betterment of blind youth. To those of us who knew them and worked with them they were an inspiration.

"Thou art the Truth, thy word alone
True wisdom can impart.
Thou art the Way, the Truth, the Life
Grant us that way to know,
That truth to keep, that life to win."

The following have died since our last meeting:

California		
Mr. Harry Blaha - Mobility Projects		March 27, 1968
Canada - Ontario School for the Blind		
Jean Babb - Teacher	1927-1963	Oct. 4, 1966
Agnes G. MacGillwray - Teacher	1921-1962	April 21, 1967
Colorado		
Helen Baker - Teacher	1953-1967	Oct. 25, 1967
Connecticut - Oak Hill School		
Dr. Rockwell Potter - Board Directors	1907-1967	May 15, 1967
Illinois - Braille and Sight Saving School		
Louis Rodenberg-Supt. Braille Prtg.Shop	1913-1963	Nov. - 1966
Frauncie Moon - Librarian	1913-1960	Dec. - 1967

Indiana - School for the Blind		
Mabel Leive-Head of Music Department	1931-1960	Dec. 13, 1967
Iowa Braille and Sight Saving School		
Mrs. Rose Sheldon - Housemother	1956-1963	Feb. 8, 1968
Mrs. Teresa Belknap - Housemother	1948-1955	Nov. 14, 1967
Louisiana State School for Blind Negroes		
John Hopkins Theus - Teacher	1925-1955	Feb. 8, 1967
New York Lavelle School for the Blind		
John Marinuzzi - Teacher	1923-1968	Nov. 25, 1967
New York State School for the Blind		
Michael Goldberg-Physical Education	1916-1958	Nov. 25, 1967
Mrs. Bertha Smith - Housemother	1947-1958	June 22, 1967
Maryland School for the Blind		
Peter E. Balter - Teacher	1928-1966	Nov. 6, 1966
Dr. Harvey Robinson-Psychologist	1958-1966	Sept. 7, 1966
Miss Marion McClintock-Housemother	1956-1965	Apr. 24, 1967
William T. Shackelford - Jr. Director	1936-1967	Mar. 9, 1967
Myrtle Dean - Teacher	1948-1965	Apr. 22, 1968
Massachusetts Dept. of Education		
Serina Cummings - Supt., Special Ed.	1952-1963	January, 1968
John Dupress - M.I.T.		Dec. 29, 1967
Massachusetts - Perkins School for the Blind		
Mary Esther Sawyer - Librarian	1904-1947	June 1, 1967
Florence Barbour - Teacher	1931-1950	Aug. 23, 1967
Mrs. Marjorie Beal Morey-Teacher		Oct. 9, 1967
Beverly Brown - Teacher	1962-1966	Oct. 16, 1966
Eleanor J. Howe - Teacher	1963-1967	May 5, 1967
Missouri School for the Blind		
Montague Harvey - Teacher	1943-1968	June 19, 1968
North Carolina - Governor Morehead School		
Kate Tyner - Housemother	1922-1953	July, 1967
Mrs. Sibyl B. Horne - Housemother	1963-1967	January, 1968
Ohio School for the Blind		
Ann Haworth - Teacher	1940-1967	Nov. 13, 1967
Louise L. Clapp - Recorder		Oct. 17, 1967

Pennsylvania - Overbrook School		
Elsie B. Cowgill - Teacher	1914-1960	July 9, 1967
Dr. Harold Gilbert - Music Director	1942-1947	
	1960-1968	Mar. 29, 1968
Pennsylvania - Royer Greaves School		
Dr. Jessie Royer Greaves - Founder and Director	1921-1967	June 21, 1967
Mrs. Dorothy Phillips - Teacher	1958-1968	June 6, 1968
Mrs. Edith B. Tasker	1953-1963	Unknown
Pennsylvania - Western Pennsylvania School		
Virginia Hoff - Teacher	1923-1960	Sept.15, 1967
Howard Leibeck - Finance Officer	1958-1968	Jan. 15, 1968
Gladys Roxbury - Housemother	1956-1964	1967
Anna Riffle - Housemother	1955-1962	July 4, 1967
South Carolina School for the Blind		
James Fowler - Teacher	1932-1967	May 17, 1967
South Dakota School for the Blind		
Walter A. Hack - Superintendent	1953-1967	Dec. 30, 1967
Virginia State School at Hampton		
Robert Ridley - Teacher	1954-1967	May 17, 1967
State of Washington Public Schools		
Victor Hass - Teacher	1964-1967	Feb. 14, 1967
West Virginia State School		
Rebecca Dailey - Teacher	1941-1947	March 5, 1968
Wyoming Public Schools		
Walter Stachon - Counselor	1966-1967	March 19,1967

We also honor Dr. Jacobus tenBrock of the National Federation of the Blind
Colonel Edwin A. Baker of the Canadian National Institute for the Blind
Helen Keller of world wide fame
Sidney B. Cohen, Executive Secretary A.A.W.B.

May we stand for a moment of Silence.

REPORT OF THE NOMINATING COMMITTEE

Herbert Wolfe, Chairman

Maryland School for the Blind

The Nominating Committee submitted the following slate of candidates for office in the Association for Education of the Visually Handicapped for the 1968 - 1970 Biennium:

OFFICERS

President
Mr. William H. English
Principal, Department of the Blind
Virginia School for the Deaf and Blind

First Vice-President
Mr. Carl J. Davis
Head, Department of Psychology and Guidance
Perkins School for the Blind

Second Vice-President
Mr. Lee Jones
Superintendent, Georgia Academy for the Blind

Secretary - Treasurer
Mrs. Mary K. Bauman
Director, Personnel Research Center

Immediate Past President
Mr. Stewart E. Armstrong
Superintendent, Ontario School for the Blind

BOARD OF DIRECTORS

Dr. Natalie Barraga
Coordinator, Program for the Visually Handicapped
University of Texas

Miss Gloria Colovini
Education Materials Center for the Visually Handicapped
Chicago, Illinois

Mr. Leland C. Sanborn
Superintendent, New York State School for the Blind
Batavia, New York

Mr. Robert McQuie
Counselor, Missouri School for the Blind

Miss Dorothy Misbach
Consultant, Education of the Visually Handicapped
California State Department of Education

Respectfully submitted,

Lou Alonso
Mae Davidow
Maurice Olsen
Laura Zetsche
Herbert Wolfe, Chairman

The first reading of this report was given Monday, June 24, 1968; the second and final reading was given Wednesday, June 26, 1968, after which additional nominations for officers and directors were requested from the floor. None was made however. Each of the above officers and directors was accepted and elected by acclamation.

FINANCIAL REPORT AND 1968 BUDGET

The following is a summary of the 1967 financial standing of the American Association of Instructors of the Blind:

Balance Sheet as of December 31, 1967

Assets

Cash in banks, checking and savings accounts		$ 12,611.24
Investments		13,441.96
Office Furniture and Equipment, valuation	3,980.96	
Less Accumulated Depreciation	511.98	3,468.98
TOTAL ASSETS		29,522.18

Liabilities and Fund Balances

General Fund	$ 10,598.80
Special Purpose Funds (Life Membership, Special Projects, Ways and Means Contest)	14,087.31
Restricted Funds (ICEBY, Conference, and Publications)	4,836.07
TOTAL LIABILITIES AND FUND BALANCES	29,522.18

Receipts and Disbursements, Year ending December 31, 1967

General Fund Balance, January 1, 1967		$ 7,030.04

Receipts

Membership Dues (Individual, Corporate, Agency, Parent Group, Student, Contributing)	32,617.19
Other Income (Investment, etc.)	1,213.37
Total Receipts	33,830.56

Disbursements

Salaries, taxes and Employee Benefits	19,065.30	
Travel (Executive Secretary and Board)	759.95	
Office Expense	5,599.94	
Professional Activities	9,155.27	34,580.46

Budget for Calendar Years 1968 and 1969

Anticipated Expenses

Salaries, taxes and Employee Benefits		$ 21,305
Travel (Executive Secretary and Board members)		1,500
Office Expense		6,105
Professional Activities		
W. C. W. B.	$ 100	
Braille Authority	500	
Committee Expenses	1,000	
Workshop Expenses	250	1,850
Transfer to Publications		8,150
Total Operating Expenses		38,910

HV1788 ASSOCIATION FOR THE c. 1
AEVH EDUCATION OF THE VISUALLY
1968 HANDICAPPED. 1968.

Date Due

~~b 11/12/84~~			

HV1788
AEVH c.1
1968

AUTHOR
ASSOCIATION FOR THE EDUCATION
TITLE OF THE VISUALLY HANDICAPPED. 1968.

DATE DUE	BORROWER'S NAME
Reference	
b. 7/12/84	~~Kathy Huebner~~

AMERICAN FOUNDATION FOR THE BLIND
15 WEST 16th STREET
NEW YORK, N. Y. 10011

Mr [illegible]

Selected Papers

Association For Education of the Visually Handicapped

Fiftieth Biennial Conference

"A Look at the Child"

RECEIVED
MAR 29 1971
M. R. B.

HV1788
AEVH
1970

June — July 1970
New Orleans, Louisiana

Association
for Education
# of the
Visually Handicapped

1604 Spruce Street
Philadelphia, Pennsylvania 19103

ASSOCIATION FOR EDUCATION OF THE VISUALLY HANDICAPPED

Known first as the Instructors of the Blind, and later incorporated as the American Association of Instructors of the Blind, AEVH began in 1853 with a national meeting of superintendents of sixteen residential schools for the blind. Except for a few years when national emergencies prevented, conventions have been held biennially since that time. At the 1968 convention, the name of the organization was changed to Association for Education of the Visually Handicapped.

In 1952 the Workshop method of national conferences was adopted and membership was broadened to include all who were interested in improving the educational opportunities of visually handicapped children. In the Workshops, educators are able to define problems and work actively toward their solutions. Under the leadership of their own elected officers, workshops may continue in common efforts between national conventions, often producing newsletters or taking action at regional meetings. Student chapters have now been formed at several universities and a move toward state chapters is also in progress.

AEVH publishes a newsletter called the FOUNTAINHEAD, a volume of selected papers from its biennial conference, and provides the professional journal, EDUCATION OF THE VISUALLY HANDICAPPED, for its members. The organization also participates actively in teacher and houseparent certification, training institutes, the development of special standards, the encouragement and report of research in the field, and cooperation with national and international agencies and organizations interested in the education of visually handicapped children and youth.

AEVH is affiliated with The Council for Exceptional Children, a Department of the National Education Association.

For further information, write AEVH Executive Secretary,
1604 Spruce Street, Philadelphia, Pennsylvania 19103.

MEETINGS

The following is a list of the conventions of the American Instructors of the Blind (1853-1871), the American Association of Instructors of the Blind (1872-1968), and the Association for Education of the Visually Handicapped (1968-1970):

1st Meeting: August 16-18, 1853 at New York, New York
2nd Meeting: August 8-10, 1871 at Indianapolis, Indiana
3rd Meeting: August 20-22, 1872 at Boston, Massachusetts
4th Meeting: August 18-20, 1874 at Batavia, New York
5th Meeting: August 15-17, 1876 at Philadelphia, Pennsylvania
6th Meeting: August 21-23, 1878 at Columbus, Ohio
7th Meeting: August 17-19, 1880 at Louisville, Kentucky
8th Meeting: August 15-17, 1882 at Janesville, Wisconsin
9th Meeting: August 19-21, 1884 at St. Louis, Missouri
10th Meeting: July 6-8, 1886 at New York, New York
11th Meeting: July 10-12, 1888 at Baltimore, Maryland
12th Meeting: July 15-17, 1890 at Jacksonville, Illinois
13th Meeting: July 5-7, 1892 at Brantford, Ontario, Canada
14th Meeting: July 17-19, 1894 at Chautauqua, New York
15th Meeting: July 14-16, 1896 at Pittsburgh, Pennsylvania
16th Meeting: July 12-14, 1898 at Lansing, Michigan
17th Meeting: July 9-11, 1902 at Raleigh, North Carolina
18th Meeting: July 20-22, 1904 at St. Louis, Missouri
19th Meeting: August 21-23, 1906 at Portland, Oregon, at Salem, Oregon, and at Vancouver, Washington
20th Meeting: July 14-16, 1908 at Indianapolis, Indiana
21st Meeting: June 28-July 1, 1910 at Little Rock, Arkansas
22nd Meeting: June 25-28, 1912 at Pittsburgh, Pennsylvania
23rd Meeting: June 28-30, 1915 at Berkeley, California
24th Meeting: June 4-7, 1916 at Halifax, Nova Scotia, Canada
25th Meeting: June 24-28, 1918 at Colorado Springs, Colorado
26th Meeting: June 21-25, 1920 at Overlea, Maryland
27th Meeting: June 27-30, 1922 at Austin, Texas
28th Meeting: June 23-27, 1924 at Watertown, Massachusetts
29th Meeting: June 21-25, 1926 at Nashville, Tennessee
30th Meeting: June 25-29, 1928 at Faribault, Minnesota

31st Meeting: June 23-27, 1930 at Vancouver, Washington
32nd Meeting: June 27-July 1, 1932 at New York, New York
33rd Meeting: June 25-28, 1934 at St. Louis, Missouri
34th Meeting: June 22-25, 1936 at Raleigh, North Carolina
35th Meeting: June 27-30, 1938 at Lansing, Michigan
36th Meeting: June 24-28, 1940 at Pittsburgh, Pennsylvania
37th Meeting: June 26-30, 1944 at Little Rock, Arkansas
38th Meeting: June 24-28, 1946 at Watertown, Massachusetts
39th Meeting: June 21-25, 1948 at Austin, Texas
40th Meeting: June 26-30, 1950 at Philadelphia, Pennsylvania
41st Meeting: June 29-July 3, 1952 at Louisville, Kentucky
42nd Meeting: June 27-July 1, 1954 at Batavia, New York
43rd Meeting: June 24-28, 1957 at Worthington, Columbus, Ohio
44th Meeting: June 22-26, 1958 at Vancouver, Washington
45th Meeting: June 26-30, 1960 at Donelson, Tennessee
46th Meeting: June 28-July 2, 1962 at Miami Beach, Florida
47th Meeting: June 21-25, 1964 at Watertown, Massachusetts
48th Meeting: June 26-30, 1966 at Salt Lake City, Utah
49th Meeting: June 23-27, 1968 at Toronto, Ontario, Canada
50th Meeting: June 28-July 2, 1970 at New Orleans, Louisiana

Copies of convention proceedings or selected papers for many of the above meetings may be purchased by inquiry to the office of the Association for Education of the Visually Handicapped, 1604 Spruce Street, Philadelphia, Pennsylvania, 19103.

OFFICERS

For the Biennium 1968-1970

President
William H. English
Principal, Virginia School for the Blind
Staunton, Virginia

First Vice-President
Carl J. Davis
Psychologist, Perkins School for the Blind
Watertown, Massachusetts

Second Vice-President
Lee Jones
Superintendent, Georgia Academy for the Blind
Macon, Georgia

Secretary-Treasurer, 1968-1969
Mrs. Mary K. Bauman
Director, Personnel Research Center
Philadelphia, Pennsylvania

Secretary-Treasurer, 1969-1970
Leland C. Sanborn
Superintendent, New York State School
for the Blind
Batavia, New York

Immediate Past President
Stewart E. Armstrong
Superintendent, Ontario School
for the Blind
Brantford, Ontario, Canada

DIRECTORS

For the Biennium 1968-1970

Dr. Natalie C. Barraga
Coordinator, Program for the Visually Handicapped
University of Texas
Austin, Texas

Miss Gloria Calovini
Office of the Superintendent of Public Instruction
Springfield, Illinois

Robert Dodge (1969-1970)
Teacher
San Mateo, California

Robert McQuie
Counselor, Missouri School for the Blind
St. Louis, Missouri

Miss Dorothy Misbach
Consultant, Education of the Visually Handicapped
California State Department of Education
Sacramento, California

Leland C. Sanborn (1968-1969)
Superintendent, New York State School for the Blind
Batavia, New York

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EDUCATING THE MULTIHANDICAPPED BLIND CHILD

Josephine L. Taylor, Coordinator

Units on the Visually Handicapped,
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Division of Training Programs
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United States Office of Education
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I should like to congratulate the Program Committee on their selection of the theme of the multihandicapped child for this biennial convention. The committee's action coupled with a review of the literature in our professional journals and publications during the past several years and the audience meeting here today exemplifies the recognition of the leadership on special education that the best possible educational opportunities should be made available for all handicapped children.

I doubt that any other professional organization has devoted its entire convention to this crucial and very difficult problem. Education of the multihandicapped is not new to those concerned with visually handicapped children. We are familiar with the dramatic story of the education of Laura Bridgeman who entered Perkins Institute for the Blind in 1837 and became the first deaf-blind child to be educated. We are far from reaching the goal of providing an appropriate education for the many children who have handicaps in addition to serious visual impairment. However, some rather dramatic developments in responding to the needs of the multihandicapped are evident in various parts of the country.

Although it is generally recognized that there has been an increase in the incidence of multihandicapped children we have only a rough estimate of how many there are, despite some extensive surveys, notably the one sponsored by the American Foundation for the Blind, and the one performed by Dr. Berthold

Lowenfeld for the California State Department of Education. The results of both of these have been published by the American Foundation for the Blind, an organization that has contributed much to our understanding of the problems in this field through its research and publications. Among these publications is the study of the *Blind Child with Concommitant Disabilities* by Dr. James M. Wolfe. Dr. Wolfe is co-editor and compiler with Dr. Robert M. Anderson of a recent publication of Charles C Thomas Company, entitled the *Multiply Handicapped Child,* which includes contributions of over 30 persons who have a strong concern for multihandicapped children.

One reason we do not know how many multihandicapped children there are is that these investigations were made prior to the impact of the rubella epidemic of 1964-1965. Even today, as the children with resultant congenital anomalies are beginning to reach school age, we do not know how many there are, and what their handicaps are, but we do know that this epidemic greatly increased the numbers and that future rubella epidemics may add many more, unless there is a step-up in the availability and use of the rubella vaccine.

Prevalence studies, as well as most legislation and determination of funding resources, have been based upon medical categories for determining the additional handicaps and limited to the industrial definition of blindness for the visual handicap.

Educators reached a stage of sophistication long ago in which they recognized that medical diagnoses, or figures that indicate visual acuity, decimal loss or, for that matter, IQ, are of limited value in determining a child's educational needs, or his emotional or social adjustment, or the service requirements of his parents. It is imperative that each child have a thorough physical examination, and that all possible means be applied to bring him to the optimum of physical and mental health. This is a basic right of all children, but any program purporting to serve handicapped children, that does not make provision for this throughout the child's school life does not have a sound foundation. It is the continuing psycho-educational evaluation that will determine whether or not a child is multihandicapped, or for that matter whether he is handicapped, in terms of school programs. The children about whom we should be concerned during this convention might be described as follows:

"Those who, in addition to a visual impairment, have at least one other disability regardless of the extent of either, the combination of which causes such severe educational problems that they cannot receive adequate services in educational programs for visually handicapped children or in those established for other handicapped children."

Some of you will note that this definition has been borrowed from the definition of deaf-blind children used by the Bureau of Education for the Handicapped. I feel quite comfortable with this definition because I assumed a major responsibility in writing and in shepherding it through the legal procedure to authorize its use. The general concept had long been in practice, and is very similar to the definition used by the National Committee on the Education of the Deaf-Blind.

I present this definition in the hope that it will help with communication. We are here as educators interested in knowing what in the broadest sense, the education problems are, in order that we may plan for the future. This definition may also help distinguish between handicapping conditions and educational inconveniences on the basis of whether the child can receive an adequate education. Under this definition a totally blind child on crutches or in a wheelchair, would not be considered multi-handicapped unless the psycho-educational evaluation brought out other problems in learning which could not be appropriately provided in the program for the visually handicapped, or in a program for the orthopedically handicapped. It may be inconvenient to build a ramp, and a bit expensive to buy a one-hand brailler or to adapt a typing program, but it is possible, and has been done for many years. If the child needs physical therapy this of course should be provided by the appropriate medically oriented professional personnel. On the other hand, if whatever caused the orthopedic handicap also caused an additional learning problem, as is sometimes the case in cerebral palsy, it may not be possible for either the program for the visually handicapped or the orthopedically handicapped, to provide an adequate education. Such a child would be considered multihandicapped.

The decision on who is multihandicapped would be based upon psycho-educational evaluation of the child's educational problems. There are numerous examples of children who have more than one physical or mental disability, but who are able to receive an adequate education among children who do not have a handicap, or in programs for a particular type of handicap. Here are a few examples: the child with a cardiac condition, or some other problem that prevents him from participating in rugged sports, but who nevertheless can carry on a normal educational program; the child with a mild speech defect which requires therapy but does not interfere with his educational program; the mildly hard-of-hearing child who may be able to participate well in all classroom activities provided a slight adjustment is made to be sure he is seated where he can hear what is going on; or the partially seeing child, who although he may have a severe additional handicap, can be accommodated in the regular educational program adapted for the more severely handicapped. If we consider the multihandicapped child to be the one whose additional disability is of such a nature that he cannot receive an adequate education, even with adjustments within the regular classroom, or a classroom for children with a simple handicap, we may find that there are not as many multihandicapped children as some of the investigations have indicated. We will know for certain how many there are, who they are, and where they are only when they have had a thorough physical examination and treatment for improvement of their handicaps plus a thorough psycho-educational evaluation to determine what type of individual educational planning is necessary for them. As educators and psychologists sharpen their diagnostic skills and their ability to communicate more effectively, it is possible that we may find that there are children who have not previously been so considered, who really are multihandicapped from an educational standpoint. These might include children with specific learning disabilities including something so basic as insufficient tactile discrimination or children considered retarded who actually have greater potential than previously assumed, provided the teacher is trained to make the necessary adaptations in a child's educational program.

Although the diagnostic and evaluation team approach has been used extensively -- a new team teaching diagnostic system has developed through which the findings of the psychologist, social worker, physician, and others are brought together to make an educational diagnosis of the child's learning problems. A program is "prescribed" for the child by each member of the teaching team according to his area of specialization. In a special project directed by Dr. Verna Hart at George Peabody College for Teachers, the development of a team teaching practicum, as the basic element in a training program for teachers of multihandicapped children, is being watched with great interest. Out of this project and out of another, a research project co-directed by Eileen Jackson and Philip Hatlen of San Francisco State College, there will also be developed techniques for measuring changes in behavior as a result of professional help and some detailed descriptions of teaching strategies and curriculum for multihandicapped children on the early childhood level.

Perkins School for the Blind, long time leader in educating the deaf-blind, is also using the diagnostic teacher approach and apparently has found a successful means of helping to resolve the problem of providing individual attention for children despite the shortage of trained personnel in the area of the deaf-blind. Assistant teachers are employed to work under the direction of those who have had professional training. Frequently, a recruitment bonus occurs at the close of the year of individual internship, when the assistant teacher decides to enter the graduate program for professional preparation of teachers of the deaf-blind.

Another interesting variation in services to children combined with teacher training programs is practiced at Michigan State University, and the Deaf-Blind Department of the Michigan School for the Blind. Here undergraduate teacher training program students, after completing most of the required academic training, spend a full year as paid interns at the School for the Blind. A supervisor of interns gives full time to no more than five trainees. The concept of an individualized internship is not new. In the proceedings of the 1936 convention of this organization, you you will find an article by Frank Andrews, in which he describes a program through which a teacher from another school would come to Perkins with the deaf-blind child from that state, study for a year, and then return to the school with the child. During that year Miss Hall, the first director of the Deaf-Blind Department at Perkins, would train the teacher so that she could carry on with the child when she returned to her home state. Most programs in other schools for the blind were developed by teachers who had received this type of tutorial internship.

Andrews also wrote in 1936 of another concept which I will quote here not because it is a current trend, but because it would seem to have good possibilities for consideration in the regional center plan which includes cooperation of teacher training institutions and development of local facilities. Andrews stated that, "Another interesting development of this work is Dr. Farrell's desire to give people training in this field. We have hired an exchange teacher. This teacher is available to any school which has a deaf-blind child and which needs a teacher to educate him. The school chooses a teacher and sends her to us for training, while our exchange instructor carries on with the child until his regular teacher returns from the training period."

Probably the most dramatic change has been the rapid increase in the number of classes for multihandicapped children. Much of this has come about through the availability of funds from the United States Office of Education under the amendment to Title I of the Elementary and Secondary Education act, Public Law 89-313 and through Title VI-A of that act. In reviewing the list of projects under this legislation, we find numerous institutions for the retarded have developed classes for their visually handicapped children. In a number of instances the employment of trained teachers of the visually handicapped is included. Now, most but not all, residential schools have developed special classes for multihandicapped, including very severely multihandicapped children. Most larger city school systems have special classes of this type and there have also been developments for multihandicapped children in some smaller districts and in regional centers. Teacher training programs provide practicum experience in classes for the multihandicapped. Small private schools, some of which were formerly nursery schools in private and public agencies and clinics continue to carry a share of the responsibility. Each year we see an increased "working together." Some residential schools provide diagnostic services for children who attend local schools or institutions or are still at home without a placement. Summer programs for children are offered by residential schools, agencies and a few local schools in the community. Some include children who are not part of their regular academic-year student body.

The regional planning and programming concept of the Centers for the Deaf-Blind children seems to have survived the birth trauma, but continues to have many growing pains. I personally believe that this concept of regional coordination of services is the bright star of our future ability to meet the problems of providing adequate educational services to visually handicapped children including those who have additional educational problems. We have come a long way in developing new programs, and we are making strides in our ability to evaluate what we are doing in services to children, and in training personnel. We are also upgrading our services through the development of instructional material centers and special projects, such as the one in Texas for developing a sequential series of educational materials and through a variety of special study institutes.

However, when I look at the map of the United States and see over 500 different school programs for visually handicapped children scattered over it, ranging in enrollment from four to over a thousand, I am concerned. If several states can work together to provide adequate services for deaf-blind children perhaps they can also work together to provide adequate services for other types of multihandicapped children with other educational problems.

In this respect, I am particularly concerned about the average, or above average visually handicapped child, who does not appear to have additional educational handicaps. Among those at the early childhood level there seems to be an increased number blinded from retinoblastoma or from congential glaucoma, neither of which are usually accompanied by additional handicaps. Many of these children have above-average potential. The idea that all of these children might live at home, attend their neighborhood schools and have itinerant teachers is not realistic. There are many parts of our country that do not have adequate local school programs for visually handicapped children. Also there are many parts of our country that probably can never have adequate programs because of the paucity of population in a given area. Moreover, even if we extend and improve our parent counseling skills, there will probably always be some parents who are unable to provide a healthy, stimulating environment for their visually handicapped children. Perhaps we have reached a level of maturity at which we can give up the little red school house for visually handicapped children, and begin thinking in terms of consolidated programs -- stretching, if necessary, across state lines not only for the multihandicapped, but also for the not-to-be-forgotten visually handicapped child, who does not have severe additional learning problems.

It seems probable that a change in funding patterns will be necessary to accomplish any type of regionalized educational services for visually handicapped children, including the multihandicapped. The Bureau of Education for the Handicapped has recognized that areas of handicapping conditions in which there is a low prevalence need special consideration. The Deaf-Blind Centers program is one of the prime examples of this thinking. Likewise, in determining the distribution of funds for the training of professional personnel among the various handicapped categories, special consideration is given to those of low-prevalence, including of course the multihandicapped and the visually handicapped.

These special considerations could suggest that multihandicapped children and others in low-prevalence categories such as those who are blind, or cerebral palsied or deaf, should not be denied a high quality education because they happen to live in a sparsely settled geographical location. It seems probable that the highly individualized and intensive training required for children with these special educational problems is so costly that even with regionalized services, much greater federal funding will be required if equality of education is to be achieved. The crisis in providing adequate educational services to deaf-blind children is so acute that Dr. Edwin Martin, Associate Commissioner, has indicated that the Bureau of Education for the Handicapped will focus its efforts on behalf of this particular group of children even more extensively in the immediate future.

In the meantime we, as educators of visually handicapped children, need to develop our understanding of the educational needs of multihandicapped children, to plan together and, to:

I. Recognized that the sum of knowledge of two or more handicaps does not add up to an understanding of the needs of a child who happens to have these problems. Consideration must be given to the total effect of two or more handicapping conditions upon that particular individual child, and an understanding of his resultant unique learning problem.

II. Become more flexible in our approach to children and not become frustrated or discouraged because some cannot use the tools with which we feel comfortable. For instance, we need to recognize that if a child cannot read print or braille it does not mean that he cannot learn aurally. This does not mean that he sits in a classroom where other children are reading and writing and gains what he can through listening. We need to develop a learning program for him, using to the utmost his particular abilities. We need to know a great deal more about teaching - "learning through listening" - and the development of listening skills.

III. We need to continue to concentrate on the development of efficient utilization of vision from light perception on up the scale.

IV. We need to develop better educational diagnostic techniques and teaching skills. We especially need to remember that learning is a very personal thing. Ours is the challenge to find each child's own way of learning and to plan a personal program through which he can develop his particular gifts.

MULTIPLY IMPAIRED CHILDREN: A NATIONAL STUDY

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ORIGINS OF THE STUDY

This study had its origin in the mounting concern, about 10 years ago, among pediatricians, pre-school specialists and others, that the number of multiply impaired children was increasing, due largely to two developments.

Advances in medical science had resulted in the saving of many more premature children than had been the case a decade before. Many of these premature children were considered "high risks" since they were subject to many impairments and conditions not associated with normal, full-term births. Some of these conditions were brain damage, visual impairment, hearing impairment, heart conditions and so on. Many prematures were found to have multiple conditions which earlier would have resulted in death.

This trend was dramatically brought to everyone's attention by the rubella epidemics of the mid-1960s, mainly on the East and West coasts. Some far-sighted educators (like Dr. Waterhouse of Perkins School for the Blind) began to try to anticipate what problems they would meet as these infants became pre-school children and eventually school children. In 1965 the AFB board of trustees authorized its Department of Research to undertake a survey of multiply impaired children. That study is the subject of this report.

We were fortunate enough to collect an excellent advisory committee and a first-rate full-time investigator, the then Miss Roseanne Kramer, now Mrs. Roseanne Kramer Silberman. We developed a questionnaire, based largely on a previous study by Dr. James Wolf for his dissertation at the University of Pittsburgh.

Considering our modest budget, we determined with the help of our advisory committee, that personal interviews would be too costly and that a mail survey would probably obtain more information on more children than any other technique, despite the well-known short-comings of the mail survey approach.

We mailed questionnaires to some 1,063 addressees. The response was remarkable. All 50 states, Puerto Rico and the District of Columbia responded. Every kind of institution and organization was well represented by the replies: local day schools, residential schools for the blind, private and state institutions, state welfare and health organizations, state education departments, voluntary agencies for the blind, hospitals and clinics and so on. From these sources we found data on 8887 children usable for statistical analysis. With this number, we felt that it would be possible to generalize quite safely on selected topics.

The data are not foolproof nor definitive, but, in our language, descriptive. Mail surveys leave a lot to be desired. Who answers and who doesn't? Does everyone mean the same thing when they report a child as brain damaged or mentally retarded? Who filled out the questionnaires and with what help from what files or records? These are only a few of the questions that go unanswered on a mail survey. Then why do it? You can get *some* information about a large number of people with a modest expenditure of funds. And there are some safeguards and rules of thumb that all researchers respect. Here are some points that made us satisfied that the data were relatively reliable.

First, questionnaires were returned in 1966 and 1967 from all *kinds* of institutions and organizations, not just one or two kinds. Though coverage varied, all states reported. All age groups were adequately represented although the under 6 year olds were disappointingly low: 529 or 6 percent of the sample. Etiology of blindness followed known national estimates. Additional impairments to blindness were close to what experts had observed, as were reading grade levels and mobility performance. Our data, we felt, made sense and common sense.

FINDINGS

AGE: Of the 8887 children, 529 (6 percent) were under 6; 3834 (43 percent) were 6 to 12; 3072 (35 percent) were 13 to 16; and 1450 (16 percent) were 17 to 21.

AGE AT ONSET OF VISUAL IMPAIRMENT: 4,415 (50 percent) were visually impaired at birth; 2990 (34 percent) before age 3; and 581 (7 percent) after age 3. There were no data on the remaining 901.

ADDITIONAL DISABILITIES TO VISUAL IMPAIRMENT: Percentages of additional disabilities are:.

	%		%
Mental retardation	80	Cerebral palsy	14
Speech problems	39	Epilepsy	14
Brain damage	35	Crippling-orthopedic	12
Emotional problems	17	Hearing	11
		Other	11

These data suggest two important facts: First, how very complex the problems of multiply impaired children are with so many severe impairments and conditions, and secondly, with 84 percent of this sample suffering severe visual impairment before age 3 there can be little or no visual memory so important to the perceptual and educational processes.

This in part may explain why half of the totally blind children in the sample (N=4309) are reported as non-readers. Only 15 percent are reported as having reading vision. Of the readers about one-quarter use braille and another quarter use large print or regular type as their principal mode of reading. Tapes and records seem very little used by this group. Add to this that 32 percent of the group are reported as below 50 IQ, 20 percent do not communicate through speech, and another 16 percent have defective speech, and the complexity of educating the group becomes very clear indeed.

These, then, are the principal highlights of the study of 8887 blind multiply impaired children. My principal conclusion to the study was in 1967, and would be now, that the severity of the problem could be attacked only through a national program of depth and ingenuity. Communities and parents could not afford the cost and the elaborate new techniques that were clearly called for.

This conclusion seems to have been shared by others closer to the problems of the multiply impaired. Testimony before the U.S. Congress to this effect resulted in Public Law 90-247 signed by President Johnson on January 2, 1968. This was the "model centers for deaf-blind" bill which authorized a national effort which is now developing well.

FINDINGS ON 1045 DEAF-BLIND CHILDREN

Since deaf-blindness is one of the most severe of multiple impairments and some experience with this group has been gained over the years, additional details might be helpful on the 1045 deaf-blind children in the larger group. All age groups are represented.

AGE

Below 6	11 percent
6 - 12	46 percent
13 - 16	28 percent
17 - 21	15 percent

Twenty-four percent were reported as congenitally deaf and 63 percent were reported as hard-of-hearing. The remainder could not be reported for various reasons. Of the group of 1045 children about half were reported as totally blind. Of these 549 children, about one-third were reported as deaf, one-half as hard-of-hearing and the small remainder impossible to determine. Only 20 percent of the deaf were reported having reading vision while three-quarters of the hard-of hearing had some reading vision.

Besides the congenitally deaf-totally blind group, another group seems equally severely impaired. About one-half of the deaf are under age 6. These are probably largely rubella children. Another statistic of interest to educators, speech therapists and psychologists is that about one-quarter of the deaf group were deaf before age three.

To get some information in depth, 130 cases reported by 7 states were studied further. Over half of this group had conditions additional to deaf-blindness. One-third were reported as mentally retarded, about one-third with serious speech problems, 13 percent with brain damage and so on. This is a truly severely multiply impaired group.

Of the 73 or slightly over half of the group reported as mentally retarded 40 percent were reported educable (50-90 IQ), 9 percent trainable (25-49 IQ) and 7 percent profoundly retarded with IQs below 25. Although three-quarters of the group is probably educable, their record is not prepossessing. The average grade attainment of the group of 130 is 3.1 grades while the average age is 12 years, quite a disparity. In this group, 20 percent are non-readers. Of the readers 39 percent use braille as their principal mode of reading, 48 percent use large type, 10 percent regular type, 13 percent use records and 6 percent tapes. (These add up to more than 100 percent since some reported two principal modes of reading.)

IMPLICATIONS

What do all these figures mean? I am not an educator but some of the implications for educating any multiply impaired group seem obvious enough. There are hard-core groups that will require every ounce of a teacher's ingenuity and patience to get through to: like the congenitally deaf and totally blind, like the congenitally blind and profoundly retarded, like the severely emotionally disturbed blind child, and so on. I am told that the challenge is great and so can be the rewards. Certainly teachers dealing with such intransigent problems deserve all the support they can get: special training courses and institutes where they can learn and share new techniques as well as comfort each other. Because of their particularly stressful job, they should be as free of administrative responsibility as possible. They should have the special equipment and supplies that they need. They should be given a fair chance to win.

One last thought occurs to me. The key figure, the anchor man so to speak, is the teacher but others are involved too, others that must function fully efficiently also if the job is to be done. The school psychologist must help determine the academic and personal potential of the student. A social worker must work with the parents and the teachers to remove all impediments to the human relationships involved. The medical personnel have all too obvious a responsibility in this team effort: the early diagnosis, the treatment, the recurring examinations necessary to chart the development of a growing changing child. The list could go on.

As a research specialist, I can only hope that we will be called on to record and to help interpret the confusing, complex experience that comes with educating a multiply impaired child whose motivation, whose possibly damaged ego, and whose self-goals may be in question.

All these specialists must respect each others skills. The teacher should not be expected to be an ophthalmologist, nor an opthalmologist a social worker. Each has his own unique contribution to make. The severely multiply impaired need all the help that they can get. Traditional ways and techniques of dealing with them are going to have to give way to innovative and creative processes.

But perhaps the biggest obstacle to overcome is the feeling, however inarticulately expressed, that guiding multiply impaired children to a reasonably rewarding life is really too complicated, too risky, too expensive. The doubters should look to the work being done at Ann Arbor and the Oregon School for the Blind--to name only two--if they think that success isn't possible. They have shown what hard work, patience, dedication and faith can do. Let us all try to do as well.

REGIONAL CENTERS FOR DEAF-BLIND CHILDREN - A NEW HOPE

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The rubella epidemic of 1964-65, as it swept across the nation, left a tragic toll upon an estimated 20,000 infants born with one or more of the following handicaps: cataracts, hearing defects, heart malformations, mental retardation, and brain damage. In addition, some 20,000 pregnancies were terminated in miscarriage or stillbirth.

The National Communicable Disease Center in its June, 1969 *Rubella Surveillance Report,* estimated the economic cost for the Nation's 20,000 children with congenital rubella syndrome for 1964-65, as $919,912,000. This includes the following: More than $28,000,000 in medical care, more than $48,000,000 for institutional care, and more than $742,000,000 in the area of special education.

Largely as a result of the 1964-65 epidemic and the perseverance of educators of deaf-blind children, Congress approved the Act, Public Law 90-247*, Part C, which amends Title VI of the Elementary and Secondary Education Act, to develop comprehensive Centers for deaf-blind children. President Johnson signed this Act on January 2, 1968 and in September of 1968, Congress appropriated $1,000,000 for fiscal year 1969. By June 1, 1969 eight Regional Deaf-Blind Centers were funded at a cost of one million dollars. Three of these Centers were developmental in nature and planned during their first year to develop specific programs to meet the needs of deaf-blind children in their area. Five of the Centers were combined developmental/operational programs and were able to provide to some degree basic services for deaf-blind children.

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*As of April 13, 1970, Public Law 90-247, Part C, Title VI of the Elementary and Secondary Education Act is now Part C (Sec. 622) of Public Law 91-230, Title VI, the "Education of the Handicapped Act".

In fiscal year 1970, two additional planning Centers were funded. The remaining eight Centers have all become developmental/operational and will soon begin their second year of activities. The ten Centers will now serve and plan for the needs of deaf-blind children in all 50 states. (See Appendix.)

I. The Deaf-Blind Center Concept

It is the intent of Congress, under this Act (P.L. 90-247), that the Deaf-Blind Center programs be

> "...designed to develop and bring to bear upon such children beginning as early as feasible in life, those specialized, intensive professional and allied services, methods, and aids that are found to be most effective to enable them to achieve their full potential for communication with and adjustment to the world around them, for useful and meaningful participation in society, and for self-fulfillment."

The "deaf-blind child" who will be the concern of our Center programs is defined as a child who has both auditory and visual impairments, the combination of which causes such severe communication and other developmental and educational problems that he cannot properly be accommodated in special education programs developed solely for the hearing handicapped child or the visually handicapped child.

The Deaf-Blind Center concept is not to be thought of as the creation of a monolithic structure into which we pour all deaf-blind children. Rather, the Center concept is administrative and organizational in nature -- utilizing every available resource to provide services for all deaf-blind children.

Because of the breadth of services needed by deaf-blind children of all ages, and the scattered geographic distribution of these children, it is essential that a number of agencies, both public and private from every state concerned, join together in developing comprehensive regional Center programs. All agencies involved in such cooperative work of the Center are considered Participating Agencies. Those states which have voluntarily come together to develop a regional Center program have designated a Coordinating Agency which is legally responsible for administering the Center program under the grant and will also serve as the locus of the office of the Coordinator of the Center program. (See Appendix.)

II. Deaf-Blind Center Program Objectives

A. The Regional Centers with the assistance of the Participating Agencies, will provide the following services:

(1) comprehensive diagnostic and evaluative services for deaf-blind children;

(2) a program for the adjustment, orientation, and education of deaf-blind children which integrates all the professional and allied services necessary therefor; and

(3) effective consultative services for parents, teachers and others who play a direct role in the lives of deaf-blind children to enable them to understand the special problems of such children and to assist in the process of their adjustment, orientation, and education.

B. The Deaf-Blind Centers will also plan and make provisions for the following activities in order to identify and meet the full range of special needs of deaf-blind children and their parents:

(1) research

(2) development or demonstration of new programs concerned with the education of deaf-blind children.

(3) inservice training of professional and allied personnel working with deaf-blind children

(4) dissemination of materials and information about practices found effective in working with deaf-blind children; workshop proceedings, publications, movies, video tapes, etc.

III. Deaf-Blind Center Planning and Operational Goals

The following stratagems are fundamental to the successful planning and operation of all Regional Deaf-Blind Centers in order to meet the objectives detailed earlier.

1. Identification of deaf-blind population -- We cannot begin to plan effectively in our regional Center areas until we locate these children and identify their needs.

2. Identification of resources available --

   a. Immediate resources which can provide specific programs for deaf-blind children

   b. Potential resources which with some modification, perhaps by means of in-service training, may be adapted to include deaf-blind children in their program.

3. Identification of children presently served --

   a. Type of programs, their location and staffing in each program

   b. What is the future potential of the resources identified, i.e. can they be expanded to include more children; what is required in way of staffing, training and construction, to expand services?

4. Identification of population not served --

   a. This relates to the identification of potential resources (3b) and their expansion.

    b. What new facilities must be constructed (day school, private, residential)?

5. Determine the economic cost factors relating to the development of programs for deaf-blind children and their parents--

    a. Identification of population, resources, number of children served and not served

    b. What are the manpower needs on a professional and paraprofessional level?

    c. How many classrooms/facilities needed?

    d. What kinds of programs are needed for the children, for staff training?

    e. What are the construction needs?

6. Develop, expand and increase the number of facilities, programs, and services to provide and assure appropriate services for deaf-blind children --

7. Develop meaningful inservice training programs to improve and upgrade the status of staff in existing programs (especially those institutions for the retarded) to assist them in developing and providing greater opportunities through more meaningful programs for our more severely disabled deaf-blind child.

8. Coordinate all community resources, i.e., medical, clinical, social, institutional, and educational, to provide services for more deaf-blind children and their parents. (Related to #2 identification of resources available)

9. Stimulate the development of Teacher-Training programs. Where feasible, viable relationships should be developed with such university training programs to provide a lifeline of trainees in Deaf-Blind Center programs. (Develop more undergraduate programs modeled after the Michigan State University program.)

10. Coordinate all existing Federal resources to supplement the program needs of the Centers, in addition to the identification of state and local resources for providing these services and for funding.

IV. Center Survey Results

As of April 1970, 2,461 deaf-blind children have been located by our Center surveys, which are still in process. More than 54% of this number, or 1332 children are under 9 years of age. It should be understood that not all of the children located and suspected of being deaf-blind, have had the benefit of comprehensive diagnostic and evaluative services. One of the major objectives of the Center program is to provide comprehensive diagnostic and evaluative services for *all* these children.

In the academic school year 1967-68, only 256 children were receiving adequate educational services -- 100 were in six residential programs for deaf-blind children. The remaining 156 were in programs for the deaf, the blind, public and private school programs. In 1969-70, 802 children were enrolled in educational programs. This leaves more than 68% of our surveyed population (or 1600) without the benefit of adequate educational programs. Some 347 of these children are in institutions for the retarded, the remainder are at home.

The Center programs, in their first year of operation evaluated 161 deaf-blind children. We hope in 1970-71 to evaluate more than 400 children. However, the real challenge to be faced by the Center program comes *after* the evaluation process is completed. Will we have a sufficient number of programs with adequately trained staff for our children? Can we plan comprehensive programs to meet the needs of all our deaf-blind children? The answers to these questions depends not only upon Federal assistance, but total local, State, and community involvement.

It is estimated that 4,000 deaf-blind children may have resulted from the 1964-65 rubella epidemics. These children will one day be adults, and will then become the responsibility of the National Center for Deaf-Blind Youth and Adults. We must work closely together to avoid the error of thinking which separates the world of education from the world of rehabilitation -- as if they were two separate and distinct entities. It is essential for the future well-being of our deaf-blind children, that we consider their vocational needs early in their development.

To this end, I can assure you that the Bureau of Education for the Handicapped, will dedicate its energies along with State and local agencies, so that these children will live a more meaningful and fruitful life *in* this world, rather than *apart* from it.

AREA CENTERS	CENTER AREA SERVED
Mr. Ronald Cyphers, Coordinator Area Center for Services to Deaf-Blind Children Title VI-C, ESEA c/o Alabama Institute for Deaf and Blind Box 268 Talladega, Alabama 35160 (205)362-8460	Alabama Tennessee Georgia Florida Kentucky Mississippi
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Mr. Don Moriarty, Coordinator Area Center for Services to Deaf-Blind Children Title VI-C, ESEA c/o Colorado Department of Education 430 State Office Building Denver, Colorado 80203 (303)892-3382	Colorado Utah Nebraska Kansas New Mexico Wyoming
Mr. Lars Guldager, Coordinator New England Area Center for Services to Deaf-Blind Children Title VI-C, ESEA c/o Perkins School for the Blind 175 North Beacon Street Watertown, Massachusetts 02172 (617)924-3434	Massachusetts Maine New Hampshire Vermont Connecticut Rhode Island
Mr. Charles Weir, Coordinator Area Center for Services to Deaf-Blind Children Title VI-C, ESEA c/o Michigan State School for the Blind 715 Willow Street Lansing, Michigan 48906 (517)373-3730	Michigan Wisconsin Illinois Indiana Ohio

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Mr. Khogendra Das, Coordinator Area Center for Services to Deaf-Blind Children Title VI-C, ESEA c/o The New York Institute for the Education of the Blind 999 Pelham Parkway Bronx, New York 10469 (212)547-1234	New York New Jersey Pennsylvania Delaware
Coordinator Area Center for Services to Deaf-Blind Children Title VI-C, ESEA c/o North Carolina Department of Public Instruction Education Building Raleigh, North Carolina 27602 (919)829-3813	North Carolina South Carolina Virginia West Virginia Maryland District of Columbia
Dr. Edwin K. Hammer, Coordinator Area Center for Services to Deaf-Blind Children Title VI-C, ESEA c/o Callier Hearing and Speech Center 1966 Inwood Road Dallas, Texas 75235 (214)638-1100	Texas Arkansas Louisiana Oklahoma
Mr. Paul Starkovich, Coordinator Area Center for Services to Deaf-Blind Children Title VI-C, ESEA c/o Washington State School for the Blind Post Office Box 1865 Vancouver, Washington 98663 (206)696-1611	Washington Oregon Alaska Idaho Montana

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THE CENTER CONCEPT FOR DEAF-BLIND CHILDREN

Dr. Edward J. Waterhouse, Director

Perkins School for the Blind
Watertown, Massachusetts

The all-embracing aims of the Center Concept, namely that all deaf-blind children, wherever they may reside in the United States of America, should be given every opportunity to develop their maximum potential, is most laudable.

At present, the country is being divided into ten different regions, in each of which an agency has accepted the responsibility for coordinating services for deaf-blind children in that area. The coordinating agency is not itself the "Center." Indeed, the word Center as used in this act refers rather to all agencies in a region which have services to offer deaf-blind children.

Nor are the regions mutually exclusive. Agencies are not discouraged from offering services to children in other regions if services are not available there, or if parents prefer to have their children served in that way.

The act is strengthened by a generous and all-embracing definition of a deaf-blind child. The act itself does not define deaf-blind children, but the guide lines drawn up by the Bureau of Education of the Handicapped in the Department of Health, Education and Welfare does provide a definition. It is essentially the definition adopted by Perkins over a decade ago and is as follows:

> "As used throughout these regulations, the term 'deaf-blind child' means a child who has auditory and visual handicaps regardless of the degree of impairment, the combination of which causes such severe communication and other developmental and educational problems that he cannot properly be accommodated in special education programs, either for the hearing handicapped child or for the visually handicapped child."

The legislation recognizes that a deaf-blind child's progress depends to a very great degree on the support he receives from the family and also urges that services be rendered to the child at as early an age as possible. Stress is placed on the provision of consultative services to children of all ages and to their families.

The success of a Regional Center depends on many things. The following list, not intended to be in order of importance, includes some of them:

A. Plenty of money. Federal, state, private, local, family. So far, resources are wholly inadequate.
B. An understanding of what is needed to bring a deaf-blind child up to his maximum potential by state officials, special educators, community leaders, and the families involved.
C. Cooperation between parents and participating agencies.
D. Cooperation between participating agencies and the coordinating agency, and among participating agencies directly.
E. An agreement between state departments, private agencies and families concerning the share of the cost each is prepared to bear for services.
F. An adequate supply of fully qualified teachers, child care workers, social workers, psychologists, and administrators to render the services needed and to interpret them to parents and others.
G. Facilities for the training of personnel in the special needs of the deaf-blind.
H. An advisory board to coordinate the planning of regional services and their provision.
I. Provision of special educational services for deaf-blind children adequate to meet the diverse needs of each child.
J. Provision of diagnostic and evaluative services for deaf-blind children.
K. Provision of the widest possible social experiences for deaf-blind children under the direction of trained personnel.
L. Provision of placement services for children completing their education.
M. Provision of services for deaf-blind children who cannot benefit from an educational program.

N. As complete a register as possible of deaf-blind children to be served.
O. A directory of agencies able to offer services.
P. Facilities for disseminating information to all concerned.
Q. Research in the area of the deaf-blind child.

It would be possible to elaborate on each one of these items listed and to prepare a paper on it. Nor is it suggested that the list is complete. In addition, it is not feasible to operate services in a region without consideration of what is being done elsewhere. One weakness of the regional set-up as it has operated so far is the absence of any coordinating or planning group with responsibility for setting up standards on a national level.

This is not intended as a criticism, either of the Act or of those who are working energetically to implement it. The Act certainly does not prevent such a body from being formed. There is a strong case for the view that more progress has already taken place in developing and implementing services for deaf-blind children since the center concept was developed, than in many years previously.

Nor is communication between coordinators wholly lacking. However, such interchange of information that has taken place so far has been limited mostly to reports on what each one is doing. Some of these reports are impressive, especially in those parts of the country where very little, if anything, was being done before. The next step would seem to be to determine whether what is being planned and done is wise. Until national standards are discussed and agreement reached, the influence of the U. S. Department of Health, Education, and Welfare cannot be exerted as effectively as we would hope, and the federal act will fall far short of its goal. No action taken by any state or region can in itself be as effective as action taken on a recognizably national level.

For this reason, a national meeting of Regional Coordinators and Project Directors, together with high representatives of State Departments of Special Education seems desirable. We would hope, of course, that the Department of Health, Education, and Welfare would participate.

This meeting should be soon enough so that the results of the discussions can be effectively used in preparing grant proposals for DHEW for the school year 1971-72. Such a meeting also should be helpful in determining what kind of Federal support is needed for the coming years. Until standards are set, it would seem impossible for any of us to estimate what our needs should be.

Accordingly, Perkins has extended an invitation to participants to attend such a meeting in Watertown during the third week of October 1970 and we hope that much good planning can result.

THE MULTIPLY IMPAIRED VISUALLY HANDICAPPED IN THE RESIDENTIAL SCHOOL

Jerry Regler

Nebraska School for the Visually Handicapped
Nebraska City, Nebraska

I believe I have been included on this panel because I represent a state where the population is relatively small and is largely rural. Nebraska has a population of about 1-1/2 million. In the past 20 years, an average of five children per year were born functionally blind; i.e., they would have problems with mobility and need to use braille for their medium of instruction. About half of the children live in the Lincoln-Omaha area; the others are spread over 500 miles to the west, rarely more than one in a county. The school itself is in the small town of Nebraska City, (7000), one hour's drive from either Omaha or Lincoln.

I give you this introduction because my first point is that programs must be designed to meet the needs of the people they serve. Also, the program a residential school can provide depends on the resources available where the school is located, and the number and places of residence of the families it serves. For this reason it is difficult to make generalizations but I will try to suggest some factors that should be considered by the staff of most residential schools.

Responsibility:

Residential schools for visually impaired children must accept the administrative responsibility, if not the leadership, in seeing that *all* blind children in their states have an opportunity for education in an organized program. This does not mean that all children who are blind should be enrolled in the residential school, but it does mean that through cooperation with other agencies and organizations all children will have at least one program outside their homes on which they can depend for an education. If programs are not available it is the administrator's responsibility to organize or cooperate with groups to introduce legislation to designate responsibility within the state for the education of children not now included.

Any residential school for the visually impaired is limited in the numbers and kinds of multi-handicapped pupils it can enroll. It is first responsible for the education of blind children in the state who have no other serious physical or mental handicap. It should have some responsibility even to pupils enrolled in their local school districts to insure that the opportunities provided are adequate. And certainly, as long as the residential school is the only program available to a group of these children it has a responsibility to provide an exemplary program for blind children that is not weakened because of the needs of the multi-handicapped children who may be enrolled.

Sensitivity:

The staff of a residential school must be sensitive to the needs of the individual pupils. Houseparents, teachers, food service personnel, all the staff must accept each child as he is, at the time he enters the program and try to provide experiences that will improve his self-image, confidence and independence. The greatest hazard that can befall a residential school is that the program is designed for an image of what a child who is blind should be and the children are programmed to reflect that image.

Flexibility:

If a school is sincere in providing for the needs of the individual, then the school must be flexible, not only with materials and teaching techniques, but in organization and curriculum. Ten years ago, I thought a self-contained classroom provided the best educational climate for the blind child. I have gone farther away from that concept every year since. We now have an ungraded school and each child must deal with several adults daily. Flexibility is the reason for the change. We are able to give individual help on a one to one basis, perhaps even utilizing some behavior modification techniques, and at other times work with groups covering an age range of several years but achieving at nearly the same level. This organization, of course, takes a great deal more time to plan and coordinate. In fact, to do it right, the staff needs extra planning days, free from the responsibility of working with the children.

Continuity:

The administration of the residential school must not only take the responsibility to see that all blind children have an opportunity for an education but they must see that there is continuity from their school to the next step. A pupil should never leave the residential school without a plan to meet his next objective, whether it is another school or a job. This means the administration, teachers, and counselors must cooperate with rehabilitation agencies and the appropriate personnel in other schools to provide work experiences, and experiences in independent living skills, so that it is possible to make the transition to what follows. We must take the time to know each pupil and plan a program with him in mind, a program which will change year by year and day by day.

Speciality:

A residential school has some advantages over a day school program. If the staff does not take advantage of their stable environment to work together for the benefit of the children they have no reason for their existence.

They should provide the specialized texts and learning materials that they find most efficient in aiding learning of the pupil who is blind. The very core of the integrated program is that the blind child uses the same texts and materials as his sighted classmates. The best materials for teaching children with sight may or may not be the best for the blind.

Physical education, music, speech, home economics, vocational training, orientation and mobility and other areas which are extremely limited to blind children in integrated programs, must be an integral part of the plan of each pupil in a residential school. To provide a program for multi-handicapped children it probably is necessary to provide a curriculum for children who cannot read and write because of physical or mental handicaps. Residential schools should be planning complete courses in oral instruction for these pupils.

While there is no substitute for braille for independent reading, its practical value is largely restricted to formal education. For children who in several years cannot read independently it is difficult to justify a great deal of time being devoted to further instruction in reading. Pupils should have a chance to learn as much as possible from listening to information and practicing first hand the application of what is to be learned. Many experiences are necessary before a pupil can generalize concerning a single concept and this takes a great deal of time under the guidance of teachers and houseparents who can recognize practical learning situations.

It is unfortunate that, although we have seen the need of including multi-handicapped children in the program for the blind and we have learned some of the techniques that are successful, it has not been possible to move more rapidly in implementing programs. We help no one when we accept the responsibility for educating multi-handicapped children without the personnel to work with them, and until funds are appropriated to meet the needs of these children it is not possible to offer a program for them. One of the most difficult decisions usually comes when funds are made available because they are usually insufficient to enable all multi-handicapped children to be served. In this case it is necessary to accept first the youngest of the children simply because there is more chance of making progress with them.

With the current emphasis on programs for handicapped children surely, through cooperation with all agencies, a program can be made available that is suited to each child.

THE MULTIPLY-IMPAIRED VISUALLY HANDICAPPED IN THE RESIDENTIAL SCHOOL

Margaret Polzien, Principal

Michigan State School for the Blind
Lansing, Michigan

DEFINITION

A multiple handicapped child at the Michigan School for the Blind has, in addition to his visual impairment, one or more of the following handicapping conditions which require special services and adaptations of his training, educational instruction, and materials:

- Mental retardation
- Hearing impairment
- Speech impairment
- Emotional disturbance
- Crippled
- Other (Health)

HISTORY

The first services for multiple handicapped children at the Michigan School for the Blind began in 1949 when a class for three deaf-blind children was organized. Two years later an additional teacher was added to meet the needs of increased enrollment. Currently, this department consists of twenty-four deaf-blind children at various training and educational levels with a staff of nine teachers and four teacher aides.

In 1956 a class was organized for emotionally disturbed, mentally retarded and crippled children and was started with a trained teacher. Services for these children were expanded in 1958 and have steadily grown. At present forty-one students are taught in six special classrooms by an instructional staff of six and two teacher aides. These students are integrated into some regular classes when feasible.

The 1969-70 enrollment of multiple handicapped children totaled 112. In addition to the special classroom placement mentioned, many multiply-handicapped children are integrated into regular classes. With the exception of five day students and fourteen pre-school deaf-blind children, all multiple handicapped pupils are integrated in the resident dormitories.

OBJECTIVES

In addition to the objectives common to all the students at the school, the classes for multiple handicapped children strive for specific goals.

Parents are counseled to be more realistic in the acceptance and enjoyment of their child, thus creating a more receptive home environment.

Teachers are cognizant of materials, research and development in their particular area of instruction.

Teachers provide the training and educational experiences for each child according to his individual ability and development which may necessitate individualized instruction, slower pace and presentation of concepts in a relaxed atmosphere and use of numerous classroom learning aids.

Teachers recommend classroom placement for those who acquire skills which make possible functioning in a regular classroom.

Teachers provide a variety of meaningful experiences through concrete activities, field trips and demonstrations.

Teachers develop each child's physical, mental and emotional capacities to the fullest extent.

Teachers reduce frustration by presenting materials to the individual child at a level at which he can experience success.

Children develop a realistic and healthy self-concept.

Children are trained to be as independent and self-sufficient as ability permits, which for the pre-school child includes training in eating, sleeping, toileting, walking, dressing and bathing.

Children have some form of communication. (Oral communication is stressed initially, but if this cannot be achieved, then manual and written communication is introduced.)

Children develop skills of social and daily living.

Children are integrated into as many school activities and programs as possible: physical education, occupational therapy, music (group and individual), home economics, recreation, scouting and other club activities.

Children develop self-expression and self-control.

Children attain mechanical skills, hobbies and other recreational pursuits.

PROGRAM SUMMARIES

The Deaf-Blind Program has sixteen children between 3-1/2 and 5 years of age and eight youngsters from eight to twenty years of age. Fourteen of the 3-1/2 to 5 year olds are residential students, housed in Huron Cottage, which also serves as the training setting for twelve members of this segment.

The Deaf-Blind Program has one Supervising Teacher who is certified for teaching deaf-blind. She also serves as Intern Consultant for five Intern Teachers who completed their certification for teaching deaf-blind at the end of the current school year. In addition, there are two full-time and one half-time certified teachers, one teacher certified for teaching orthopedically and visually impaired, and two teacher aides who are high school graduates.

Physical facilities include Huron Lodge, a self-contained living-learning cottage, two self-contained rooms in the Elementary School Building designed to provide individual instruction for three of the younger children and four of the children aged eight to thirteen, and one classroom in the Secondary Building for the four older students, aged fourteen to twenty.

The motor activity equipment for this department includes a climbing house, walking ladder, balance equipment, tricycles, wagons, carts, large wooden blocks, stairs and tumbling mats. Sense training equipment lists vibration boxes, auditory equipment, language kits, pianos, bass drum, record players, tape and cassette recorders, toys and games. An enclosed play area with suitable equipment adjacent to the cottage is available.

The Elementary Program for Emotionally Disturbed and Mentally Retarded Children serves twenty-four, ranging in ages from five to fourteen. One teacher is certified in the areas of visual impairment and mental retardation. Two are certified teachers of the visually impaired, the fourth has certification in the visually impaired with additional course work for deaf, mentally retarded and emotionally disturbed. Volunteer assistance is available upon demonstration of need.

Instruction is provided in four classrooms, two of which are self-contained and have adjacent activity rooms. Special equipment includes a closed circuit television, record players, cassette and tape recorders, wheelchairs, cages for the care of small animals, and assorted games, blocks, puzzles, cards, art and instructional materials.

The Secondary Program for the Emotionally Disturbed and Mentally Retarded has a current enrollment of seventeen students, nine are enrolled in Junior Prep and eight in Senior Prep. There are two teachers, one certified in mental retardation, visual impairment and social work; the other has certification in elementary education, visual impairment and mental retardation.

Their physical facilities include a Junior Prep and Senior Prep classroom in the Secondary School Building and these students are also integrated into numerous high school classes. Special equipment lists a closed circuit television, record players, tape and cassette recorders, piano and large areas for storage and typing.

CURRICULUM GOALS

1. Language Arts

    A. Help children to increase in oral and written communication.

B. Adequately help children to listen and realistically interpret what they hear.

C. Teach reading skills to each child to the limit of his capacity.

D. Instruct in the proper use of learning aids and special equipment -- talking books, braillers, braille typewriters, typewriters, tape recorders, writing guides, hearing aids, earphones, and glasses.

II. Numbers Concepts

A. Practical teaching of concepts

1. Teach number concepts that have immediate application to children's daily lives, such as money and time.

2. Application of number concepts to daily living.

3. Recognition of reasonable estimate in applying number facts.

B. Develop quantitative thinking in arithmetic number concepts.

III. Science and Health Education

A. Develop a recognition and an appreciation of the balance of nature.

1. Relationship between climate and plants.

2. Adaptation of all living things to their environment.

3. Adaptation of man to his changing environment.

B. Practical application of man's relationship to his environment.

1. Personal hygiene.

2. Safety.

        3. Sex education.

        4. Man's expanding universe.

IV. Social Studies

    A. Understanding the inter-relatedness of man and hi social environment.

        1. Family living.

        2. Community relationships.

        3. State -- allocated functions and responsibilities of the state and its citizens.

        4. Nation -- our 50 "united states."

        5. World -- power structure, customs, culture.

    B. Actual participation in an expanding environment.

        1. Field trips

        2. Guest speakers and programs

        3. Related activities

        4. Special learning aids -- maps, globes, etc.

    C. How geographical locations influence the life and work of people.

    D. How history influences culture and customs.

V. Fine Arts -- develop creativity, understanding, and appreciation of art, music and literature, and encourage participation as a means of enjoyment and self-expression.

    A. Art

        1. Coordinating art with other subject matter.

        2. Motivate active participation in artistic activities.

B. Music

1. Develop listening skills

2. Develop musical potential of individuals through specialized instruction.

C. Literature

1. Understand content and appreciate form through listening and/or reading.

2. Enable the student to interpret the content in order to draw conclusions.

VI. Physical Skills

A. Make the children independent and self-sufficient, as they are capable. For the younger children this includes:

1. Dressing

2. Eating

3. Sleeping

4. Gross body movements

5. Toileting

6. Walking

7. Bathing

8. Climbing -- jungle gym and steps

9. Running

10. Bike riding

B. For the older children who have the above skills, the following are stressed:

1. Orientation and mobility

2. Body image

3. Posture

4. Manners

C. When they are ready, the children are integrated into regular gym classes, which include:

1. Organized sports and games

2. Calisthenics -- gymnastics

3. Swimming

4. Dancing

5. Wrestling

6. Bowling

7. Roller Skating

8. Trampoline

VII. Social Skills

A. Teach social skills and behavior acceptable to peers and society.

B. Develop an acceptable personality.

1. Manners

2. Grooming

3. Consideration of others

C. Realistically appraise their potential and limitations and to make a successful adjustment.

D. Develop an attitude of sincere appreciation for the many forms of community assistance.

VIII. Vocational Training and Work Experience

A. Vocational opportunities in which they can realistically achieve experience in those areas which are available to them on campus after school hours and for which they receive hourly pay. These include:

1. Dining room
2. Food delivery
3. Bakery
4. Kitchen
5. Janitor
6. Library
7. Braille transcriber
8. General library aide
9. Switchboard
10. Houseparent
11. Office thermoform
12. Print shop

B. Prevocational courses are given in caning, weaving, piano tuning, home economics and industrial arts.

COMMENTS: Although opportunities for qualified applicants are limited, the existing experiences are very good for the participants. A full-time rehabilitation counselor works with and places students in the above areas after assisting them in obtaining their social security cards and, if necessary, their working permit.

IX. Leisure Time Activities

A. Introduce additional entertaining activities in the residence halls:

1. Checkers -- Dominos -- Chess
2. Bean bag games
3. Bingo
4. Picture and word card games
5. Knitting
6. Weaving (potholders, eg.)
7. Cootie
8. Simple cooking (cookies, cakes, popcorn, etc.)

X. Recreation -- The multiple handicapped children participate with their peer group in the school's recreation program.

WORK EXPERIENCE FOR THE MULTIPLE HANDICAPPED

A. Integration in Campus Work Experience Program

In the campus work experience program an attempt is made to involve the multiple handicapped students. This year at least one deaf-blind student worked on the program in the kitchen. We also had another deaf-blind student last year. We included in other areas blind, retarded students primarily in those positions that required lesser amounts of responsibility. These students are selected on the same basis as all other students in this particular program. They have to complete an application, submit to a job interview procedure, complete the necessary personnel forms and abide by the rules and regulations of the program, maintain an established level of work performance, responsibility, dependability and other work attitudes. For this they receive a bi-weekly pay check and contribute to the various income taxes and retirement funds. They work side by side with our regular school staff and must adapt to the respective work situations. Periodic evaluations are made in regard to their performance, attitudes, etc., and counseling and guidance administered when problems arise.

B. Chick-N-Joy Project

This is a special project reserved for junior and senior prep students in which they work after school for approximately an hour assembling Convenience Packs for a local Chick-N-Joy store. This involves putting a napkin, plastic fork and knife, and a tube of salt into a waxed-paper sandwich bag and stapling it shut. This is done by using an assembly line technique in which one student is assigned one specific job and then the work passed to the next student until we have the finished product. The finished product is then returned to the store and payment is received at the rate of one cent apiece. This is distributed among the students on the basis of the number of days they worked. The money is paid in cash rather than in check form. This program will accommodate six students, all of which are mentally retarded or emotionally disturbed. Guidance and counseling is given and standards of production are insisted upon. Quality control is also maintained.

C. Comments

Performance on either of these programs offers the rehabilitation counselor an opportunity more realistically to recommend post-high school training to the respective field counselors of the Division of Services for the Blind. In some cases this means a saving of rehabilitation case service funds and a shortened rehabilitation period.

THE MULTIPLY-IMPAIRED VISUALLY-HANDICAPPED IN THE DAY SCHOOL

Verna Hart

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The concept of the type of student who can succeed in a public school day program has changed during the past few years. Previously, discussion centered around whether the child was functioning at a high enough level to include him in a day program. However, today the children who have been excluded from residential schools are under consideration. Thus multiply handicapped children have placed a new focus on the type of children currently enrolled in day programs.

In discussing the multiply handicapped child in a day program I have been asked to discuss the Team Teaching Practicum for Teacher Preparation in Multiple Handicaps, A Special Project from the U.S. Office of Education, that has been carried out for the past year and which was pilot studied the year before. This program involves "excluded" children from ages 3 to 9. "Excluded" means these children have been refused admission to traditional programs for normal children and in special education. Next year work will begin with children from birth on, hopefully to avoid some of the multiple handicaps that are now seen.

The program came into being because there did not seem to be an ideal practicum for teacher preparation in multiple handicaps. The ideal number of children that a teacher in multiple handicaps could handle was unknown and there did not seem to be one teacher who had all the attributes needed to teach them.

Thinking about what would go into an ideal practicum it was necessary to throw out all prior training and all of the traditional ideas held about the types of children to be taught. What really was needed? What were the important areas for developing?

It was decided after some thought that there would be four emphasis areas of development in the curriculum. One would be self-care skills which would cover basically eating, toileting, walking, and other skills needed to succeed in a program. Another area would be speech and language and this included everything from non-verbal behavior to defective articulation. Listening skills would be stressed. The third area was adaptive behavior. This would be a "getting ready period" for the children. Everything was included from basic deficiencies to reading readiness for attainment in a traditional educational program. The fourth area was motor development and included everything from body image to mobility for those children needing it.

Knowing that there were four areas and very few teachers who were competent in all four areas, a team teaching approach was chosen. There would be one teacher for each of the areas: speech and language, adaptive behavior, and motor development. All three teachers would handle the self-care skills.

Excluded children were selected for several reasons. It was felt that if success were achieved with excluded children and these excluded children were able to enter into a regular program, then success could be made with higher level children by continuing their development from a very low level of functioning on through school age behaviors. Another reason for selecting the excluded population was that it was readily available. Children had been excluded from school for various reasons and were currently sitting at home. Many of them were known to various agencies around the community and there had been prior contact regarding possible placement for them. Therefore a list of names was available from which to select students.

The range of ability of these excluded children was surprising. One child was completely competent in all areas but expressive language. Another child could literally do nothing - not even hold up his head. Still another with normal intelligence had been sick for the beginning years of school and then had been excluded because she was too old for the beginning class. The range of abilities was indeed broad!

The choice of students was also made on the basis of including as many different handicapping conditions as possible because this was a teacher preparation program. It was felt that the student teachers who have had contact with various types of handicaps would be more willing to accept them into a program once they were in a teaching position and able to accept or exclude pupils.

The differing abilities made it very difficult as far as teaching was concerned and a narrowing of the types of conditions and range of ability was considered so that it would be a more homogenous group and more easily handled by the team of teachers. However when this was suggested to the students who had just completed their programs with the broad group of students, they were almost unanimous in their objection to homogeneity. They felt it was one of the best things possible in their learning experience to have a wide variety of handicaps and a broad range of handicapping conditions. In this way they could see how the team of teachers handled the groupings and activities to make a learning situation that was maximum to each student.

Having decided on the areas of emphasis and on the type of child that would be involved, groups were chosen for the team of teachers according to the child's level of functioning in each area: the motor, the adaptive behavior, speech and language, and self-care skills. This meant that the children were grouped into three groups in each of the four areas. There was a high, medium and low group in speech and language, another high, medium and low in motor development, another in adaptive behavior. One child at a time was brought into the classroom with a program being set up for that one child. As soon as the child was functioning well within the schedule another child was added.

In doing this it was found that the children could not be categorized by handicapping conditions. The deaf and the blind could very well be grouped together in one group. It was found that the children consistently were inconsistent in that they were high in one area, low in another area, and medium in another. It made a great problem as far as grouping the children was concerned because each group was unique. It was felt, however, that each child should see each teacher each day and therefore the groupings rotated among the various teachers. This caused a tremendous problem in scheduling but once the scheduling was established it became a very feasible working situation. The program had to remain very adaptable because the children, as they made gains, were constantly changing from group to group.

For grouping purposes it was found that individualizing instruction was paramount. Regular classes more and more stress the fact that they are individualizing instruction but it was necessary within this setting to do even more. The need evolved to know exactly where to begin with each child. The answer to this was based upon the information given to us in child development. For instance, in motor areas six year olds are very active, seven year olds become more cautious and nine year olds play hard until they are exhausted. Such information was necessary for us in planning and establishing the various grouping and the curriculum involved. In cognitive development six year olds can tell the difference between two simple objects, seven year olds can give the similarities between two simple objects, but eight year olds can give the similarities and differences between simple objects. At nine the idea of independent critical thinking emerges. These were facts that had to be considered. Where is the child now and where should we take him? In language, six year olds use language aggressively. They call names, they argue, they threaten. Seven year olds use language complainingly, eight year olds are out of bounds verbally with exaggerations, a great deal of talking and tall tales, but at nine language begins to be used as a tool. It was felt that most of our children, although they were not at the six to nine year old levels in language, were at a progressive stage of development and it was necessary to reach down in the child development levels and take them from where they were to where we wanted them to be for their particular mental age and level of development.

In self-care skills it is known that six year olds have a large appetite but refuse foods by spells, seven year olds have moderate appetites, eight year olds have excellent appetites with few refusals, and nine year olds have their appetites under better control but they frankly refuse certain foods. At ten the children love to eat, eat tons of food, and are constantly filling their empty stomachs. Here it should be pointed out, as mentioned previously, that a child might be functioning within a high level in motor development, a low level in speech and language, and a middle level in adaptive behavior. However a child can also function within one area at a very, very broad level. One of the children in our program, as you can see by the slide, has skills in the language area that range from a few months to that of 3½ years. He is deaf and therefore does not make the sounds that would go along with his age level. At four years of age he is able to follow directions like a 3½ to four year old. He has inner language like a four year old. He socializes with his mirror image like a two year old and his expressive language is below the first year level. The same is true with his adaptive behavior. He plays well with others at the three year old level. He can put together puzzles at a three year old level but he's still on a one year old or eighteen month old level in that he takes naps after school. He responds to music as a two year old, but he is extremely happy and prideful in what he makes with his hands which would be three year old level behavior. In self-care skills he is able to wash his hands much as a two year old but he has difficulty in buttoning his clothing and taking off his coat because of his cerebral palsy condition. However he is able to function as a three year old in putting away his clothes. He can eat by himself. He has a good appetite but he's at about an 18 month old level in toileting behavior.

It's important to recognize the fact that we cannot immediately pigeonhole students into one particular age level of child development. Let's take two 14 year old boys who function at the same level as far as their achievement scores are concerned. Their scores place them at the same level in word meaning, in comprehension, and in arithmetic comprehension. However it should be noted that they vary a great deal in word recognition, in oral spelling and in listening. Therefore, even though they are functioning on the same level as far as comprehension and word meaning are concerned, you would have to take into consideration the very wide variation in word recognition and particularly in listening comprehension when planning their programs.

In establishing a program for the children that we had enrolled it was necessary for us to set up very short activity periods because the children had extremely short attention spans. It was decided that the small group and the large group activities would be alternated, and that there would be quiet activities interspersed with more active ones. One of the reasons for doing this was that the team of teachers did not have any additional help available to them. Therefore by alternating the small group activity it meant that a teacher could take a child off for toileting or for individual attention while the other two teachers held the large group. The quiet and active groupings were made to allow the children a means of getting rid of their fidgety behavior so that they could sit quietly during the very brief periods. After this had gone on for a period of time it was possible to lengthen the periods where the children quietly had to attend.

Many traditional ideas were broken in setting up the new program for multiple handicapped children. Each child was not placed with one teacher to get used to that particular teacher. It was felt that the children could learn to relate to more than one person and so they were exposed not only to the team of teachers but to the various student teachers and student volunteers in the classroom.

It was felt it was not the number of teachers who made the difference in the child's relating to them, it was the consistency of the teachers. Therefore some means was necessary so that all of the personnel within the classroom would be using consistent behavior with the children. Charting behavior became the technique decided upon for this purpose. In the hand washing activity, hand washing was broken down into sequential steps and the progress of each child was plotted on a chart that was placed in back of the sink. Each child's name was placed on the chart and a square was filled in with bright red magic marker for each step of the hand washing activity that he could carry on by himself. If he needed help in carrying on the activity the square was outlined with red but left white in the middle. This meant that anyone who looked at the chart could see which stages he could do by himself, which were the stages where he needed help, or if the square was left completely white, what he had to have done for him. However each child was placed through the whole sequence of steps in hand washing each time that he washed his hands. Any child who was able to accomplish any of the steps by himself was expected to carry out that activity. This enabled all of those working with the children to have consistency in their handling.

When the student teachers came into the classroom, charting behavior was carried further into the steps of precision teaching. This meant that each of the children's lesson plans was broken down into the behavior that was desired, the conditions surrounding that behavior, what specifically was to be done to elicit the behavior, what was to be done if the child accomplished the behavior, and what was to be done if he did not.

Precision teaching evolved because one little boy was ready for spoon behavior and the lesson plans evolved around the use of a spoon. One of the teachers working with him would say "take your spoon." Another would say "get your spoon" and still another would say "pick up your spoon." In essence this child was receiving three different commands instead of the one command that was wanted. The lesson plans were blocked out so that there would be the behavior that was wanted - to pick up the spoon, and the conditions surrounding it - he would be seated at the table with his spoon at the right hand side. The command to elicit the behavior would be "get your spoon." If he did it, the teacher was to say "good boy." If not, his hands were to be taken and physically placed on the spoon so that he would take it. After working on this idea of a common lesson plan the techniques of precision teaching were used as a measuring device. This was carried out for several reasons: for a record of achievement of the children It was necessary to know what he was learning and how rapidly he was learning it. Knowledge was needed as to effective reinforcer and effective techniques in teaching him. Measurement of change was needed for the satisfaction of the child. Many of our children were able to recognize and to see the gains that they had attained. It was also desired for the satisfaction of the teacher. When working with multiple handicapped children the gains in behavior are often so small that some are realized between September and later in the year but it's very important to know that these gains are consistent and that there's some kind of record of successful attempts at change.

Precision teaching with its specific goals necessitated breaking down classroom tasks. For instance, with washing her hands one of our children sometimes was able to do things and sometimes could not. It was found that her very inconsistent behavior resulted because she was unable to take the first step - the locating of the sink. When she was able to locate the sink satisfactorily she could do several of the other steps. However if she was not able to locate it immediately she became so upset that she was not able to carry out any of the steps in hand washing.

It was also necessary to break down the tasks to where the children could succeed. The hand washing activities were consistently started at the beginning and carried through for each child. There was only one activity where all the children could succeed and that was that they could take a towel from the paper towel dispenser and pull it down. Therefore each child experienced success in the step where he could, but the whole routine was carried out.

Other tasks had to be broken down much more minutely than normally. Some behavior charts can be answered with "yes" or "no."

For instance, in drinking behavior the chart read "lifts the cup off the table to drink" with the next step "drinks from a cup independently." In looking back at this activity it was found that there were several steps between lifting the cup off the table to drink and drinking from a cup independently. First of all the child could lift the cup off the table to drink and needed help in getting the cup to his mouth and help to return it to the table. Then the cup could be lifted off the table to drink and the child could drink independently but needed help getting it back on the table. Still later the child could lift the cup off the table to drink, could drink from it and then place it back on the table independently without spilling it. There were many things that were similar to this. It was essential to break down activities to make them to the level of the child. In using precision teaching care was taken to pinpoint the behavior before and during the applications of consequences. Only those behaviors that would be consistent positive learning experiences for the children were programmed. By recording these changes, it was possible to have behaviors in a positive area and they continued even after the consequences were removed.

There were other factors involved in our program. Parents met one day a week in a group situation. The mothers came to consider this their day off and looked forward to the socialization and learning that came from other parents of handicapped children. Next year this parent training will be expanded into the home situation so there will be a better continuum for the activities started in the classroom being carried on in the home.

There were also psychologists in the classroom. It was felt that it was very important to involve psychologists so that they could learn to evaluate extremely handicapped children. Too often the psychologists look at these children, decide they have had no experience with them, and really don't attempt to evaluate them. Therefore the psychologists have been involved with the children in various ways and hopefully will be more adequate in testing situations. Several of the psychologists are now interested in establishing some kind of learning activity that will present an indication of learning potential rather than an IQ test score of present level of functioning.

Aides from other types of programs were also involved with the children. Aides often were responsible for particular educational aspects of their programs and so were presented with the rationale and ideas of the team teaching practicum so that they could adapt pertinent parts for their own settings.

In essence this is what is being done with multiply handicapped children in a day school setting. It has been found that children who have been excluded from other programs because of multiple handicaps can learn, they can succeed, and above all they can be placed in traditional special education programs as well as traditional educational programs and they can succeed in those settings.

THE MENTALLY IMPAIRED VISUALLY HANDICAPPED IN A NON-TRADITIONAL INSTITUTIONAL SETTING

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I. Extent of the Blind Mentally Retarded

How extensive is the problem of the blind mentally retarded in state institutions? As a result of a nationwide survey conducted in January 1968 as part of a special project, a questionnaire was devised and sent to 142 state institutions for the mentally retarded as listed in the *American Association of Mental Deficiency's Directory of Residential Facilities for the Mentally Retarded*, 1965. This questionnaire was sent only to state-supported institutions, and did not include private facilities or public or private residential schools for the blind. The results of the questionnaire are based on the returns of 136 out of 142 state institutions, representing 47 of 49 states, plus the District of Columbia. (Alaska is not listed in the directory and the Commonwealth of Puerto Rico has only a private institution for the mentally retarded.)

Survey Findings	
Number of States Reporting	48
Returns	95.8%
Number of Residents*	6,797-6,900
Sex Distribution*	
Males	3,058-3,100
Females	3,739-3,800

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*Some institutions reported a range of figures or errors in tabulation.

Age Distribution

	Number	Percent of Population
0-5	370	6%
5-18	2,872	44%
18-25	1,451	22%
25+	1,844	28%
Total	6,537	100%

1. There is a significantly large number of blind mentally retarded children and adults in residence in state institutions for the mentally retarded.

2. More than half of this population (66%) were between the ages of 5 and 25 years, the crucial years in education and rehabilitation.

3. Many of this population, in addition to blindness and retardation, have physical and emotional problems. This was determined by an "additional comments" section on the questionnaire. Truly, the descriptive term "multiply handicapped" is applicable to this segment of the blind population.

4. Some of the institutions indicated that three of the major reasons they lacked programs for this group were (a) problems of financial assistance and resources, (b) lack of effective programs in other state institutions which could be utilized as reference models, and (c) lack of trained professional staff.

5. The approximated total population of 6,797-6,900 blind mentally retarded persons in institutions for the mentally retarded represents various degrees of retardation, from profoundly to moderately retarded.

6. I would not hesitate to postulate from the survey results that approximately 20-40% of the blind mentally retarded segment in institutions for the mentally retarded could probably profit from a systematic program in the habilitation or rehabilitation area.

7. Less than 12% of the institutions indicated that they presently had some form of education or rehabilitation program. A priority for program development needs to be established, either on a national or state level, in those states that have reported a significantly large population of blind mentally retarded per-

sons.

8. The present survey results represent only a small sample of the blind mentally retarded population. It did not include those blind mentally retarded individuals who may be at home or in private institutions for the mentally retarded, or those who may be in residential schools for the blind.

9. Since this survey, a number of young deaf blind mentally retarded children have been entering various state institutions throughout the country. It is probable that the incidence of multiply handicapped blind in the state institutions will continue to increase significantly in the next few years.

10. Finally, I would not hesitate to project from the above figures that there are probably between 16,000 and 24,000 individuals in the United States who are both blind and mentally retarded. Taking the number of blind persons in the United States as 500,000 would result in an incidence of retardation in the blind population of approximately 5%, a conservative estimate. Incidence of mental retardation in the total population of the United States has been estimated as somewhere between 3 and 10%.

II. Greene Blind Unit

The Greene Blind Unit is part of the Walter E. Fernald State School, a state-supported institution located approximately seven miles west of Boston. Established in 1848, it is the oldest state school for the mentally retarded. Its founder, Dr. Samuel Gridley Howe, was the director of the Perkins School for the Blind. Since its founding, this institution has had and continues to have many far-sighted superintendents. Under the leadership of the present superintendent, Malcolm J. Farrell, M.D., the Greene Blind Unit was planned and constructed.

The Greene Blind Unit opened in 1954 as a result of increases in cases of retrolental fibroplasia, and is currently the only special facility for the mentally retarded blind in the Commonwealth of Massachusetts.

The resident population of the Unit is approximately 250 individuals ranging from one year of age up to the older geriatric group.

Situated in the Unit are living, recreation, and educational facilities. In addition to the Unit, there are many other buildings at the institution which include dormitories for 1600 sighted residents as well as 25 blind persons who are not residents of the Greene Blind Unit.

III. Unitization

In January 1970, two state schools in Massachusetts were selected to pioneer a revolutionary administration restructuring. The Walter E. Fernald and Paul A. Dever Schools were chosen as initial institutions to be unitized. As a result of unitization the School has been sub-divided into smaller functional units, headed by a director with considerable authority and responsibility in his respective unit. This reorganization has had several important consequences. First, the unit director will be assisted by a team with considerable knowledge about each of its residents so that an individual program can be designed for each resident. In the past, observations and decisions had to percolate through so many levels of authority that it was difficult to make an effective response to the resident's needs.

Secondly, communication has been improved among staff, residents, and community agencies. Under the unit system, the unit director and his staff will all be responsible for one group of residents, and resultant programming. Communication concerning individual residents thus can be a daily occurrance. Each unit director and staff has ready access to professional consultation. Unitization will result in better communication with the residents' relatives and those community agencies which might be helpful in each resident's educational program.

Thirdly, most policies can be formulated and set at the unit level. Rules and procedures can be set in accordance with the Unit's need and mission. Under the old system, one set of operating procedures had to be applied to all buildings, and hence did not fully meet the needs of many of them. Probably the most important aspect of the Unitization is the emphasis that each unit has a purpose over and above that of providing custodial care which encourages the concept that residents are to be transferred in accordance with their accomplishments and needs.

A consistent and logical program can most readily be designed and developed at the unit level to fulfill one specific function, such as preparation for life in the community, physical habilitation, self-care or, when appropriate, optimal and humane basic care, or a fuller life within the institution.

The exact composition of a unit team will depend on the function of the Unit. A team might consist of a unit director, nurse, physician, educator, psychologist, social worker, occupational therapist, physical therapist and rehabilitation counselor. Other members may be provided upon consultation.

The two programs which I plan to describe are representative of the wide spectrum of our population. The first is a relatively new program for young deaf blind children and the second is for residents in their early teens up to mid-fifties.

During the past two years, young deaf blind children have been admitted to the Greene Blind Unit of the Walter E. Fernald State School. These young multiple handicapped children are the result of the 1964-65 German Measles epidemic.

In January of 1970, as a result of this increase, it became necessary to develop a special Living Unit Program. Seven of these children from our population were selected to participate, and were placed in a special Living Unit. The immediate objectives during this initial phase were first to provide a stimulating sensory environment; secondly, to develop and encourage basic self-help skills; and thirdly, to provide a diagnostic atmosphere to evaluate each individual's potential.

Professional consultation, assistance and guidance for this program were provided through staff members of the New England Center for Deaf Blind Children under the direction of Mr. Lars Guldager. Through this center, arrangements were made with the Perkins School for the Blind for five of our attendant nurses assigned to the Living Unit Program to participate in classes at Perkins where they had an opportunity to observe and learn techniques which have proven to be effective with the deaf blind children at the Perkins School.

Presently, we have had to restrict the number of children in the Living Unit Program to the original seven. The reason for this restriction was due to the fact the five attendants assigned to the program had to be siphoned from other wards of the Greene Blind Unit thus reducing the number of basic care and program staff for these areas. Furthermore, it was believed by serving a smaller group of children through a low child-staff ratio the objectives of the program could better be realized. Some of the accomplishments thus far achieved have been encouraging and satisfying. All of the children in the Unit have advanced from eating puree to whole foods. All are presently feeding themselves, two of the seven have been toilet trained and the remaining five are in the process. These developments have been achieved over only a five-month period of time.

Presently, we have, in addition to the seven active Living Unit children, two more residents of the Greene Blind Unit who will shortly be involved in the program. Furthermore, as of May 1, 1970, a total of 14 additional deaf blind children are presently on our waiting list. These 14 additional children represent known Rubella Syndrome children and do not include those children on the waiting list whose major defects are blindness and retardation.

Initially the Living Unit Program was primarily focusing efforts upon the development of feeding, dressing and toileting skills but since it has expanded to include sensory stimulation, personal hygiene, mobility and gross and fine muscle coordination. Weekly field trips are planned and organized in order to provide environmental stimulation and opportunities to observe these children in a variety of settings.

Presently, the Living Unit operates on a twelve-hour day and seven-day week schedule. It has been observed that in the development of certain skills the child's environment must be controlled in order to insure consistency. Staff hours are organized and rotated to cover vital aspects of the children's program. The successes which have been achieved thus far have been the result of the consistency in the program, repetition, and individual behavior modification. In the primary stage of the development of a skill, such as feeding, individual staff assistance is given for a period of time, then a gradual withdrawal of assistance is started to a point where the child can handle the particular skill independently. The amount of time which may elapse between the introduction of the skill, through the withdrawal period to independent functioning varies with individuals, but will usually range from three to five months.

Most of the equipment which is used in the Living Unit Program has been of no special design. Empty cardboard boxes, plastic milk containers, tin cans, rubber balloons, lengths of rope, spoons, pots and pans, various size balls have been found to be effective materials during periods of free play.

During periods of structured sensory stimulation time, play dough and various teaching materials from Creative Playthings have been found useful.

In order to insure consistency when the children may go on a home visit, monthly meetings of an informal nature have been arranged with groups of parents. These meetings are held in order to have the parents become actively involved in the Living Unit Program. Through discussion, approaches developed by staff of the Unit are shared with the parents in order to insure consistency of the skills at home. These meetings have also helped the parents overcome possible emotional involvement which they may have as the result of institutionalization of their child. All of the parents have expressed enthusiasm concerning the progress their children have made.

It is believed that frequent parent-staff meetings will prevent the isolation of the child in an institutional setting. Since the establishment of the Living Unit, the frequency of parental contact and home visits of the child has sharply increased. Eventually, it is hoped that a staff member of the Unit will work with the child and the mother in the home when the child goes home on extended visits.

Though the Living Unit Program is in only its initial stages of development, further expansion is being planned for September of this year. Additional staff has been requested, including seven teachers of the deaf blind and nine additional ward personnel or child care workers. It is believed that the present group of children in the program have achieved a sufficient level of self-control whereby formal educational training may be introduced. Hopefully some of the children in the program in the near future will be candidates for another educational setting outside the institution. Those unable to profit from an outside setting will be continued in the institution's programs.

The second program I wish to describe developed as a result of a three-year study conducted by Boston College and financed through the Rehabilitation Services Administration. The purposes of this study were to determine if blind mentally retarded residents in a state institution for the mentally retarded could profit from a systematic program of orientation and mobility; if so, to what extent, and which methods of instruction would be most applicable with this segment of the blind population. During the study, a number of residents had become mobile but had no specific mobility objectives; as a result, job placements were sought within the institution's service industries and mobile residents were trained and placed in work situations. Presently, 15 residents are receiving vocational training. In March of this year, 9 of our residents who had been in vocational training and placement left the institution for further vocational training in an 18-month program conducted by the Protestant Guild for the Blind in Rowley, Massachusetts. Two residents have returned to their homes in the community. Three older residents have been placed in a private home by the Massachusetts Commission for the Blind. All of the residents who have left the institution had been involved in the three-year study.

The location of the Greene Blind Unit has been an asset in the development of its program. Graduate students in the field of orientation and mobility from Boston College spend part of the practicum training at the Unit.

Graduate teacher trainees from Perkins School for the Blind have been assigned to the Unit as student teachers. Undergraduate teacher trainees in Mental Retardation from Boston College, Boston University, Lesley College who have indicated an interest in the area of the retarded blind have student taught at the Unit before entering graduate study in the area of blindness. These students have contributed greatly to the programs at the Unit.

Programs with various private agencies for the blind have been encouraged and developed. Community oriented groups have been in operation for the past year with the Massachusetts Association for the Blind. Two nights a week and one afternoon, groups of our residents attend group sessions at various local community centers with trained group workers from the Association. These group meetings aid residents in adjusting to their local communities and provide experiences which an institutional setting cannot.

Beginning in July, a low vision aids clinic will be established at the Unit by the Boston University Clinic. This will enable the residents of the Unit to be evaluated for use of such aids.

It is the policy of the Unit and the Walter E. Fernald State School to encourage and develop program affiliations with community agencies and universities.

The pre-vocational readiness program is designed for those residents whom the staff believe could profit from such experiences. A resident will initially be assigned to the Task Management Program where staff members can evaluate the individual's strengths and weaknesses. A resident may remain in this area until a thorough observation and evaluation is made. Upon the recommendation of the Unit team an individual program is constructed with emphasis in areas in which weaknesses have been observed. A brief outline of the pre-vocational training program follows:

Pre-vocational Training Program at the Greene Blind Unit

Purpose: This aspect of the program has been designed and developed to provide pre-vocational training in those areas which have been deemed necessary to insure an individual's maximum possibility for successful adjustment to job placement within a sheltered, semi-sheltered or independent setting within or out of the state institution.

The amount of training each individual may receive will be based upon his needs. Program flexibility insures opportunity for maximum growth including areas relating to overall function as an independent or semi-independent adult. Some of these areas are described briefly below:

Techniques of Daily Living

T.D.L. is a vital component in any habilitative or rehabilitative program. Mastery of self-help skills, which leads to good personal hygiene and grooming, makes the individual more acceptable to society and future vocational placement. The objectives of the T.D.L. course are to teach each resident to be clean and well groomed; to acquire good manners so that he can live with others and practice effective habits in their presence; to build up a self-image and self-identity; and also to give learning experiences for the betterment of his own being.

Self-help skills are stressed and encouraged according to the individual's needs including ability to bathe; ability to tie one's shoes; ability to clothe oneself (zippering, buttoning, putting on stockings); ability to brush and comb hair well, ability to brush teeth effectively; ability to use deodorants; ability to eat using acceptable table manners, and of course, the use of good toilet habits.

Household Management

The household management phase of the program is devoted to the development of skills essential for successful independent living. They include cooking - the functional application of the culinary arts with the use of various modern kitchen facilities; understanding of basic tools and their application to minor home repairs; basic household chores such as cleaning, dusting, vacuuming, laundering, ironing, sewing, pouring, etc.; and basic home arrangement and decor.

Communication Skills

Communication is an essential skill which enables individuals to acquire basic knowledge about the physical and social environment. Communication includes not only the ability to understand language via the auditory sense but also the spoken and written modes. Therefore, communication must be functional and realistic with ample opportunity to foster achievement and satisfaction.

1. Controlling the volume of the voice when speaking.
2. Developing skill in facing the individual to whom one is speaking.
3. Learning to make introductions in various social situations.
4. Developing skill in use of appropriate vocabulary in specific situations such as greetings, telephone conversations, asking for information, ordering in a restaurant, handling a variety of situations concerning transportation, and responsible behavior during emergencies, etc.
5. Utilization of the tape recorder as an instructional aid.
6. Acquaintance with interviewing procedures.

Written Communication

Written communication includes a variety of media to provide each individual with a mode of expression. Instruction stresses practical usage based upon individual abilities.

1. Braille medium-writing letters to friends and mailing procedures.
2. Care of and mailing procedures for talking books and tape recorders.
3. Writing an acceptable signature for banking and legal purposes.
4. For advanced and capable individuals, instruction is given in budgeting and in writing checks.
5. The typewriter is another medium for communication with sighted friends.
6. Written communication for business purposes including proper letter headings and envelope addressing.
7. Development of a personal communication system including addresses, telephone numbers, and memoranda.
8. For the non-braille trainee, the mode of communication is the tape recorder. (Instruction is essential in care and operation of cassette and reel recorders.)
9. Instruction in wrapping and mailing packages.

Listening and Current Events

The media for listening skills pertaining to the physical environment includes a variety of mechanical instruments: radio and television, newscasts, talking books and tapes, movies and speakers. These provide ample opportunity for individuals to know more about the physical world and the problems therein, political, social, and economic.

Concept Development

The concept development program involves development of those basic concepts essential to independent mobility and a knowledge of one's environment. A knowledge of body concepts as described by Bryant Cratty is essential for the beginning phase of this program. Terminology must be consistent and meaningful for conceptualization in a variety of experiences. These experiences can involve tactual aids such as maps, scale models, actual objects, etc.

Orientation and Mobility

The objective of the orientation and mobility program will be development of skills that will enable an individual to be a safe, efficient, independent traveler during training and in future vocational placement. Such skills include: independent travel to and from classrooms and training areas; moving safely within the classroom or training areas; negotiating special areas such as the employee's cafeteria, recreational areas, public restrooms; as well as any other situation a resident encounters during training.

The orientation and mobility program will also include sensory training: training of the tactual, auditory, kinesthetic, vestibular and olfactory senses as they pertain to independent travel; concept development: development of basic concepts essential to independent mobility and a knowledge of one's environment; and body image: awareness and knowledge of one's body and the relationship of one's self to other objects in the environment. It is apparent that the above are not only essential to orientation and mobility, but compliment the other areas of training.

All orientation and mobility training will be done on an individual basis by professional trained peripatologists. An initial evaluation will be made of each resident to determine the specific needs of the individual and a program planned accordingly.

Task Management

The main purpose of the task management phase of the program is to provide residents with a series of structured, stimulating experiences in a controlled setting. The primary goal is to foster acceptable social and personal attitudes by means of related activities which are essential to successful habilitative adjustment. The tasks themselves are of secondary importance, but are structured to provide a variety of skills necessary for further habilitative development. Various materials and equipment are utilized to provide instruction in terminology, tactile discrimination, following directions, spatial concepts, accuracy, speed and the necessity for safety precautions.

Healthy work attitudes of major concern are: (1) cooperation with authority figures and acceptance of rules and responsibilities; (2) cooperation with fellow trainees; (3) concentration, perseverance, and pride in work completion; (4) control of unacceptable mannerisms; and (5) safety in handling materials.

Specific projects are presently being incorporated because of their utilitarian value at Fernald, such as making cotton swabs; making laundry tags; folding diapers, towels and face cloths; folding letters and inserting them into envelopes; packaging elastic bands 100 per envelope, packaging safety pins 75 per envelope, and sorting materials of various sizes and shapes.

Vocational Placement

The objective of vocational placement is to enable the individual to experience various aspects of vocational placement, allowing for the development of healthy attitudes toward on-the-job training and future employment. With the Greene Blind Unit as a focal point, it is possible to utilize numerous opportunities on the Fernald grounds for vocational training. The staff of Fernald is receptive to allowing these training opportunities to the blind and appreciate the assistance given them by trainees. At the present time, a number of residents work in various buildings on the grounds, performing essential functions similar to those done in the community. They function quite adequately in roles such as dishwashers, porters, laundry assistants and supply clerks. In these placements a member of the staff remained with the trainee until it was decided the individual could function effectively without supervision.

Opportunities for other types of employment are limited only by the capabilities of the individuals entering the program. At present, there is a list of other possibilities for job training at Fernald which will not be fully explored until trainees are capable of fulfilling the requirements. All in-service training is realistic and trainees are given experience in jobs in which it is felt they will be able to find successful employment in their home communities. For this reason it is essential that the staff of the Greene Blind Unit establish and maintain close communication with the counselors of the Commission for the Blind.

Leisure Time Activities and a Recreational Program

Since no individual devotes all of his energy to a vocation, it is apparent that he will have leisure time. What to do with this leisure time is the goal of this phase of the program. The ultimate goal is to develop and foster activities which enable an individual to make better use of his leisure time during training and in the future. Included in the activities will be games and hobbies as well as exploration into other personal interests expressed by the trainees.

Field trips, while mentioned last, are equally vital to the overall success of the program. Various trips shall be planned that will provide opportunities for the trainees to participate in the cultural, social and recreational programs in the community. As well, a number of trips to shopping centers and a variety of stores will be planned to expose each individual to as much as the community has to offer during the time the trainee actively participates in the entire program.

COOPERATIVE WORK-STUDY PROGRAM
FOR THE VISUALLY HANDICAPPED

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The Portland Cooperative Work Experience Program began in 1965, State Department funded under Title I. The following summers the funding was a joint effort by the Portland Public Schools, the State Department of Education and the Oregon Commission for the Blind.

The overall objective of the Work Experience Program is the preparation of students for a responsible role in the community. It was recognized that not all of our blind students in the past had been able to become completely self-sufficient even though they were very capable persons. In doing an analysis of some of the reasons for the blind child being excluded from the world of work, we discovered that they lacked the prevocational skills necessary to seek and obtain a job. They had very little knowledge of the Work-A-Day-World and its expectations for them.

The project then is an attempt to meet these needs and provide blind high school juniors and seniors with the prevocational skills that take into account the realities of the world of work and their commitment to it. It was recognized that not all students would be able to become completely self-sufficient as a high school junior or senior but that we could begin to evaluate the student and carefully plan an experience which would lead to another step and finally help them to utilize, develop and function at their highest possible level.

Vocational training and evaluation was seen as a progression through a series of steps, beginning in the primary grades and culminating in successful placement in an appropriate work setting following the completion of school preparation whether that work setting be a sheltered workshop or professional job. Whatever that job was to be, there were some goals we felt to be common at all educational levels and we sought to implement them:

1. Self-care
2. Interpersonal relationships
3. Positive attitude toward work
4. Development of physical abilities
5. Development of good work habits
6. Strengthening and improving the self-concept

Specific to our high school work experience:

7. Exploration and evaluation of job possibilities in the community
8. Realistic self-evaluation
9. Evaluation of work habits through classroom workshop experience
10. Investigation of service agencies and labor laws
11. Development of skill in job application
12. Job exploration through travel and visitation
13. Evaluation of jobs through contacts with community
14. Ability to handle pay, travel, and personal relationships
15. Application for a job
16. Successful employment and training

With these goals before us, our project begins the week following the termination of the regular school program. For the normal blind teenager our program begins each year with a two-week workshop in a public school. During the two weeks we do a great deal of work in skill development in typing, writing job resumes, writing letters of various natures and applications of all kinds. We role-play job interviews with real employers from the community who interact with students regarding various types of employment. We study income taxes, labor laws, take field trips to the labor bureau and get a labor permit, go to the social security commission and get a social security card, and discuss social security and its special benefits. We work out bus routes and obtain bus passes. We explore job possibilities through special visitors, field trips to industry, brain-storming, and discussion. Many discussion and role-playing experiences in punctuality, dress, grooming, responsibility, deportment, ability to get along with other employees, and ability to adapt to job requirements are explored with the youngsters. Through our discussions, field trips and guests, we try to develop a positive attitude toward work taking into account the realities of the working world and its demands. We travel in small groups into the downtown Portland area, going to the post office, labor bureau, large department stores, colleges, and state office buildings in order to practice some of the learnings regarding bus routes, etiquette, and orientation.

As we enter into the final week of the individual student's workshop phase, the work coordinator talks over the student's self-evaluation and placement goal. Together the student and coordinator explore some ideas of places to seek work. Then the student makes arrangements to have a job interview by phone or through a letter of application, meets with the personnel man, and he is either hired or not on his own merits.

Once placed on a job the work coordinator visits frequently to discuss successes and concerns with the student and employer and to continue to survey and develop new job possibilities. An evaluation form is used and employers' evaluations and suggestions become a part of the student's final evaluations.

Concurrent with the work experience program, we hold parent discussion groups each Thursday night for the parents of work experience students and for other parents of blind children so that they can interact with professionals who deal in various areas of rehabilitation and training. Other evening meetings also bring the work experience students together for discussion of common experiences on the job and for greater exploration of the job world through the sharing of experiences. These Parent Meetings give excellent opportunities for us to help parents of young children begin working with their children at home with some of the developmental skills necessary to pre-vocational training.

An Orientation Mobility Specialist works with students along with the Coordinator in helping students develop travel routes and skill in traveling freely on bus transportation to and from work. Many students have difficult bus transfers to make in the heart of the city but with the help of the Mobility Specialist most are able to travel somewhat independently.

It is exciting to report that we have been successful in placement. Despite the overload of students, all have had the opportunity to work - several students having had several jobs offered to them. Several other students worked at more than one job during the summer. Some jobs students have worked at include medical transcriber in a large hospital, as a Red Cross volunteer, as a janitor, as a lawn maintenance man, a boy setting up a project for a large department store, a girl doing packaging, a girl working in a nursery, a girl working at a food stand, a girl working as a dictaphone transcriber and office girl, a girl working as a receptionist and coat check girl, a boy working in a woodworking and cabinet shop, and a girl working at a hospital in Central Service, a boy doing typing, a girl as a nurses aide, a boy in a hospital laundry, a boy in an industrial tool crib, a boy as a farm hand, a girl in industrial assembly work, and a boy working in the telephone industry. We have been successful but through our summer program with community placement we have been able to identify certain areas that have posed problems.

1. Some students have lacked the necessary adjustment to work and stay with tasks that are monotonous and dull without complaining. Some were unrealistic about what work is. Individual counseling and group discussions were not too effective although a few changes were noted. In these cases, it has been necessary to search for individual means of motivation. Parental support and exposure to the realities of the world of work are so necessary.

2. A closely related problem was that of the self-image of the student as reflected in unrealistic job choices and lack of understanding as to what job requirements are.

3. Lack of parental support confused some students. Parent's goals were not in keeping with student's abilities and experiences at this time.

Because of the identification of these kinds of problem areas, we have moved toward a full year emphasis of work experience realizing that prevocational skills cannot be developed in a couple of summers but that we have to work intensively with a child over a long period of time. Community people have joined with us sponsoring "Charm Seminars" for girls, community field experiences and vocational classes for juniors and seniors.

We are now in a third phase of our program development which makes possible the employment of a full-time, year-round vocational coordinator to work with our visually handicapped students - individually and in groups to supplement our summer workshop, work experience programs, and academic school program. Many success stories can be told but we also know the agony and frustrations our teenagers have had to face as they have grappled with the realities of being on time to work each morning, of frustrations of mastering the time clock, of explaining their visual situation to curious co-workers, and of the realities of work - that it is hard, sometimes tiring, sometimes boring, but meaningful.

PREVOCATIONAL CONTINUUM:

A STEP TOWARD CONCEPTUALIZATION

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How can we best provide vocational programs for low vision and blind children? In light of the ongoing socioeconomic and technological revolutions in our culture, we must ask "what roles can our schools and agencies best play to provide the competencies so crucial for these children's personal satisfactions and vocational successes?" These questions are not only relevant to our field of the visually handicapped but to education in general. In essence, how do we answer them?

In the not-so-distant past, we attempted to offer in the schools the specific types of training which were considered appropriate for low vision or blind children. Our other alternative was a suitable college preparation program.

Today, distributive education and the cooperative and work-study programs have followed and sometimes replaced those two choices. These new programs have undoubtedly expanded the vocational possibilities available to the children. But, are they sufficient? They do partially alleviate the oft-heard challenge that only a few stereotyped vocations are available to the visually handicapped.

Another recent approach is the vocational exploration program. This approach may best be described as a "phase" of total vocational programming, for it will expand the horizons for the visually handicapped youth. Hopefully, this concept will make a greater variety of vocational choices available.

The well-known comments on the vocational accomplishments of the "active and intelligent blind" by Lowenfeld (1956), Bauman and

Yoder (1962), reveal that this segment of the blind population can be successful in a broad range of vocational endeavors. Might this tell us something about the vocational potential of an even greater portion of the visually handicapped population? This should challenge all of us who function in capacities tangential to this problem. It challenges our creative abilities to conceptualize and implement programs relevant to the present and future vocational needs of the visually handicapped youth.

This type of programming is so obviously needed today when vocational opportunities elude new graduates on all levels, from high schools to doctoral programs. Sound programming must attempt to mitigate the effects of vocational obsolescence which will affect many young graduates.

We educators are often guilty of assumptions that have far-reaching effects on our "finished products." In reality, we find that our greatest efforts in behalf of the students' vocational orientation and adjustment are concentrated at the high school level with little regard for preceding events or training. We must not assume that a concentrated program in the last few years of high school will provide the necessary background for realistic decision making. In many of our assumptions and short-sighted planning, little more than lip service is given to the pre-vocational needs of children. Otherwise, would there be so much criticism from agency counselors that the schools have accomplished so little in so much time?

Undoubtedly, there are curricular provisions for vocational study in the lower grades. But, are they sufficient and individualized and relevant to a changing world? For example, the newspapers recently carried excerpts from a U.S. Department of Labor report which stated that the need for teachers will be less in 1980 than in 1976 because of two million fewer children in the junior and senior high schools. If true, this is unfortunate timing because the blind are now finding the teaching profession increasingly accommodating as a successful occupation.

In view of such changes and predictions, it may be wise to look beyond the immediate cooperative and work-study programs which are generally confined to the high school age population. We might conceptualize a program which begins in the home, continues within the elementary and secondary schools, and culminates when the individual is capable of vocational decision-making with the appropriate agency assistance if necessary. Such a cooperative pre-vocational exploration continuum would encompass both the affective and cognitive domains.

Another faulty assumption is that the blind child's behavior can be judged in the sighted person's frame of reference. Robert Scott (1969) in *The Making of Blind Men* implied that the blind person's behavior is learned from and maintained by the sighted professionals who work with the blind. If we examine the early life and education of a visually-handicapped child, we often find that he has not had the opportunity to see or interact with the variety of vocational models that other children normally do. One is reminded that 80-90% of one's incidental learning is via the visual channel. Parents who do not receive proper help from the appropriate agencies tend to overprotect the visually handicapped child, assume he is incapable of understanding any vocational concepts, or simply fail to provide learning experiences that fill the gaps in incidental learning.

When vocational exploration formally begins later in the school programs, the visually handicapped child has no baseline of information to enable him to participate in or understand vocational discussions. Lack of comprehension of the preparation, skills and human interactions involved in an occupation often leads to unrealistic decisions. There are problems both when he chooses a vocation for which his visual impairment or other incapacities (physical, mental, etc.) prevent success, or when he is not informed of vocations which he may be able to perform if adaptations are made.

A specific example may demonstrate this problem more clearly. A 14-year-old farm boy wanted to be a farm worker after he graduated. He requested to be shown a fence post on a school field trip. How much value was the occupational information in books and discussions to the boy who lacked the experiential background and baseline of information?

Now we can ask who provides the vocational models to be emulated by the visually handicapped child, and what variety of information can be offered to him? Without assistance from competent agency or educational professionals, how can parents prepare the child so he does not enter school as "tabula rasa" in vocational orientation? The schools' responsibility in the pre-vocational preparation would vary in each state according to administrative organization. But in each school there may exist some means of providing the vital background to prepare the child for the school's own vocational adjustment program.

In considering the interaction and responsibilities of parents, schools and agencies in preparing the visually handicapped child for realistic vocational decision making, we may begin by approaching vocational orientation and adjustment as a developmental sequence analogous to all other aspects of human growth. Ginzberg and his associates (1951) presented a format for this type of conceptualization in their theory of occupational choice. They concluded that occupational choice is a process requiring from six to ten or more years.

The "fantasy period" from age six to eleven is the first period of choice. This is a period during which a child conceives of occupations as part of a desire to be an adult, and he feels he can enter any occupation he wishes.

In the "tentative period" the adolescent begins to recognize the factors of reality such as his abilities, interests and values; he puts them in perspective when considering occupational goals. It is important, as Ginzberg points out, that each decision in adolescence is related to the individual's experiences.

The final phase, the "reality period" occurs in early adulthood. The occupational choice is a compromise reached by weighing a series of subjective elements with real opportunities and limitations. How difficult it must be to realize the final period without the information successfully to accomplish the first two.

In providing a true pre-vocational continuum, we might expand the salient periods of vocational orientation downward to the early childhood years. During this period it is necessary for the visually handicapped child to have experiences which lead to the acquisition of information, skills and learning sets comparable to his unimpaired peers. These experiences play a vital role in each of the later periods of choice. Specifically, the child is exposed to vocational concepts as he performs within the family structure and as he relates to his working parents and to other significant adults.

Some specific programs and philosophies may further explain the school's role in the "fantasy" and "tentative" periods of choice. Some residential schools for the visually handicapped are working on pre-vocation orientation in the elementary grades, a few as soon as first grade.

Thompson (1969) developed a philosophy and conception of elementary level occupational development. Included in his conception is the recognition of the "fantasy" period when a child tries out different work roles as an essential aspect of development. He considers the nature of the child's attitudes toward achievement and his interpersonal relationships important to vocational adjustment. The focus of the elementary program is on adequate experiences throughout the student's years in school enabling him to make the actual vocational decisions realistically, not necessarily any earlier than usual.

Thompson set up key objectives to follow when teachers, administrators and counselors develop the specific curriculum for career orientation. These objectives are: To help the child appreciate all kinds of work; to develop the concept of flexibility (in order to adjust to the rapid development and obsolescence of jobs); to provide a wide base of experiences for realistic, not earlier, decisions; and to stress the importance of effective use of leisure time.

The school's role in programming during the "tentative" phase of choice involves the investigation of the adolescent's interests and readiness. The school staff then provides vocational exposure and first-hand vocational exploration where the student involves himself in reality testing. For a specific program, the Portland Cooperative Work Experience Program presented by Mrs. Edwards provides an excellent format.

In the "reality" period, there is the opportunity for a school-agency merger and cooperation. Presently most schools have a member from Vocational Rehabilitation working with or within the Schools for the Blind. The new Texas State Plan for Special Education incorporates another concept which may be more applicable to public schools. The Vocational Adjustment Counselor, whose position is funded by the school and agency equally, provides vocational programs for the student during his years in the school. There is then continuity as the Vocational Rehabilitation worker begins to assist the student some time before graduation and continues this assistance after the youth leaves school.

In summary, there is much value in the different work exploration programs. They enhance the success and satisfaction of vocational choice; their ultimate goal is successful placement of the visually handicapped youth. Yet, how much greater would the success of these programs be if the child were well prepared for them?

The concept of a pre-vocational continuum is based on Tyler's (1964) conclusions about readiness as discussed in *Theories of Learning and Instruction*. He feels that "readiness depends upon appropriate stimulation and opportunity for relevant learning experiences and that practice and integration are essential to knowledge or skills." To paraphrase Tyler, readiness for vocational adjustment requires a more positive approach (to both cognitive and noncognitive readiness) and provision for "enrichment," i.e., the necessary background knowledge rather than waiting for time alone to produce this readiness.

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MOBILITY FOR YOUNG BLIND CHILDREN

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What is a mobility program at the pre-school level? Is it necessary to have a specialist in this area to operate an effective program? If such personnel are available, they may be of great assistance in planning and carrying out such a program, but I do not see them as a vital ingredient.

We are faced with a young child whose movement within his environment is impeded by a visual handicap. This child, like any other, has a natural curiosity about his environment which can be satisfied only by his own exploration. To this point, we really have no problem. Now the adult figure enters upon the scene and our real problem begins.

This adult, usually a parent, places severe limitations upon the child's movements within the environment. This action is generally motivated by fear and lack of understanding. It does not take even the very young child long to interpret the fear parents associate with freedom of movement, and thus the problem takes root.

The establishment of pre-school counseling for parents would seem to be a most obvious solution to this problem, but in many instances it has not worked as effectively in reality as it does on paper. This is often not due to the lack of advice or assistance given, --- but rather to the weight of caseloads which prevent the parent counselor from providing the frequent reinforcement necessary at this early stage of the child's development.

What is needed at the pre-school level is not a host of platitudes and set speeches on the importance of movement for the young blind child. Many parents of blind children have been subjected to such orations on numerous occasions. The need is for concrete suggestions on activities and tasks which the parent can carry out with a minimum of disruption to the daily routine. So many parents are hesitant to try specific activities with their child for fear that it may have negative results. They need reassurance that this will not happen, along with a list of structured and well thought out activities that are compatible with the child's developmental level.

One cannot stress strongly enough this last point regarding the developmental level of the child. The point of intervention will not always come ideally at a time before a sizable developmental lag has been experienced. For this reason, one must look closely at the types of activities and tasks that are suggested for a particular child. A task which presupposes a complex conceptual framework must not be introduced until the basic foundation has been laid. This latter point may seem almost too obvious to warrant mention, but time and again we see tasks being introduced that far surpass the child's developmental capability. Frustration for child and parent can be the only result of such efforts.

It is important that we carefully ascertain the conceptual components of any task or activity and begin where the child is developmentally --- not chronologically.

Let us not deceive ourselves with the notion that a list of suggested activities will solve this complex problem. All that such a list can hope to provide are suggestions to the parent. The constant reassurance which parents will need must be provided through frequent contact with the pre-school counselor who will, hopefully, investigate all possible resources.

The presentation of this material should go far beyond the area that has so narrowly been defined as orientation and mobility. The child's development at this stage will affect his total learning pattern. Some parents may already have conjured up a sterotype of the blind individual using the long cane and possibly harbor strong feelings about preventing anyone from placing so symbolic a tool in the hands of their child. Still other parents look upon the cane as a "magic wand" that will lead their child about, thus seeing little need for preliminary instruction before the child is enrolled in a formal program of orientation and mobility.

To stress the connection between this work in the area of conceptual development and the child's eventual success as a user of the long cane may, in some cases, only serve to defeat one's purpose. It is important that we are sensitive to the feelings of the parents of this young blind child, who will probably find it extremely distasteful to envision their four year old eventually traveling with the assistance of such a mobility aid. Their feelings will certainly undergo many changes over the years as their child grows and develops, thus providing them with a more realistic representation of himself as an independent individual.

If the pre-school counselor is to assist the blind child and his parents in planning a program that will enhance the child's conceptual development, she must do much more than merely introduce the material in a manner that does not threaten the parents. She must be intimately familiar with early childhood development so that she is able to ascertain, through observation, a developmental profile of the child that will indicate the strengths and weaknesses of the child's conceptual and sensory motor development, so that efforts may begin where the child is developmentally. She must be capable of imparting to the parents the information which she has ascertained from careful and frequent observations.

Many parents attempt to introduce activities that the blind child's siblings were capable of performing at the same chronological age, with seemingly blatant disregard for a developmental stage that has been passed over. Anxiety can easily arise from the child's failure to meet these expectations --- feelings that are sure to be transmitted to the child, thus further impeding progress.

The parent counselor should not try to carry the full weight of such a program and would be well advised to look to the community resources for the assistance that might be needed. The family pediatrician, or a local nursery school program may be of great assistance if approached in the proper manner.

Every effort must be made to involve the family members and peers of the young blind child in these activities that will assist his conceptual and sensory motor development. The sequence of activities should follow a natural progression and make use of what is available within the child's environment, whether this be the screeching sound of a nearby metropolitan subway system, or the monotonous hum of the power mower so familiar to today's suburbia.

A list of expensive educational toys will send most concerned parents scurrying to the nearest local franchise of "creative playthings," and although such equipment may be of assistance, human involvement is the vital ingredient that we must develop.

Once those individuals working with the child understand the scope and objectives of such a program, a host of useful environmental stimuli will become self-evident. The utensils found in almost any kitchen can be a real find for the curious child who will find endless uses for the colander, measuring cup and rolling pin.

The rolling pin, for example, can be used to introduce the child to the concepts of "push" and "pull," "forward" and "backward," etc. The drawer or cabinet that houses this utensil can be used to bring across many of the same concepts. There is much to be said for the use of such common everyday materials, since the child will also learn about their more common and utilitarian functions.

Each child follows a basic developmental pattern that requires physical and conceptual growth before the child can successfully move onto the next developmental stage. The young child will progress at varying rates in particular developmental areas. His gross motor coordination may be at one level while his manual dexterity requiring finer motor coordination may be at another stage on the developmental scale. For this reason the skills and activities which we introduce must challenge a particular aspect of the developmental profile but not surpass it to the point where such an activity frustrates and thwarts growth. Parents must understand their child's developmental profile so that they can provide the type of learning situations that most adequately meet his needs.

It has been common practice for many years to expose parents to certain growth and development characteristics that are neatly divided by stages such as "the troublesome two's" or the "terrible three's." These broad categories may serve a useful purpose to the parents of the "normal" child, but we should make the parent aware of the many ways in which a visual handicap can interfere with the normal developmental pattern --- thus providing a more erratic developmental profile.

A child's gross motor coordination, which is vital to gait and mobility, may appear far below the norm, while manual dexterity may have progressed in a more satisfactory manner. Such inconsistency in the developmental profile may be found in a child who has developed good manual dexterity while playing with toys and puzzles. But if all such learning takes place within the confines of the playpen, little has been done to assist the child with development of the gross motor coordination so necessary for creeping and walking.

One of the major failings of much of the material written about the pre-school child has been use of educational jargon. Such material should be simply written, using no more than a high school level vocabulary. To present such material with brevity and clarity is a challenge but will pay great dividends in the long run.

It is also of utmost importance that professionals in the area of educating visually handicapped children not add more complexity to this problem than already exists. In many instances we do not have to look far to find persons who have a basic knowledge of young children and how they learn and grow, who can provide the type of assistance that a particular child needs. Perhaps they have had no formal training in the area of education of the visually handicapped, but in certain instances this lack of formal training may be to their advantage.

Many of you may remember Bambi Lynn, the television choreographer and dancer who appeared on numerous television variety shows during the mid 1950's. Since then she has retired to a career of private dance instruction in a town in southern Connecticut. She is a most charming and creative individual who has undertaken a project that involves a group of 6 - 8 young visually handicapped children. She provides free instruction to these children once a week, and despite the fact that she holds none of the treasured degrees and certificates she does some very inspiring work with this group. She has a real understanding and feeling for these children which stems from her creative and artistic talent, and a basic understanding of children.

As professional persons we have an obligation to look at such programs with a critical eye, to discourage what is unhealthy for the blind child and to encourage that which is effective, even when it exists outside of the territorial limits of our profession.

ORIENTATION AND MOBILITY RESEARCH AT CALIFORNIA STATE COLLEGE, LOS ANGELES

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Education, by public demand, is moving into an era of accountability. Regardless of our personal feelings, we are obliged to produce evidence of money well-spent before we can hope to justify pleas for greater support. Research, a tool for solving problems, can and must be used to produce evidence of effective teaching not only for our employers but also for our consumers and certainly for ourselves as professionals.

Assessment of Orientation and Mobility Skills

Background

From June, 1964 to August, 1968, Francis E. Lord, Director of the Special Education Center at Cal State, L.A., undertook four projects related to orientation and mobility for blind children. Two of them were supported, in part, with demonstration grants from the Vocational Rehabilitation Administration.

Demonstration training projects: Major purposes of these projects were to confirm the need for orientation and mobility training for blind children and youth in Los Angeles County (Lord, Blaha, & Manshardt, 1965) and to demonstrate that such instruction could be effectively provided for blind adolescents (Lord & Blaha, 1968). Effects of the projects have been summarized:

1. With specialized instruction, 51 blind adolescents acquired independent travel skills with varying degrees of proficiency. Subject variables appeared to be motor development, experience with the environment,

motivation, psychosocial adjustment patterns, and parental attitude. Situational and instructor variables were also operating.

2. Specialized instruction was demonstrated to be desirable and necessary. Trainees and their teachers reported gains in independence and positive self-concept. Parents indicated willingness to pay for the service. Certification was established by the California State Board of Education so that instructors could be employed by school districts. The college assumed partial support of the graduate training program.

3. Teacher-participants, while effective in teaching some of the pre-cane skills, were restricted by already full schedules.

4. Problems encountered evoked numerous questions from the project staff. Was adolescence, with its inherent complexities, an ideal time for intensive instruction in orientation and mobility or should instruction be continuous from early childhood and tailored to needs of the maturing individual? What constitutes readiness for instruction? How can it be developed and assessed? How might limiting factors of home, school, and community environments be modified to increase motivation for acquiring and using independent travel skills? What should be the role of specialist, teacher, and parent?

Concurrently, Lord (1967, 1969; Lord, Manshardt, Adams, & Bailey, 1966) investigated orientation and mobility skills of young blind children and developed an instrument to assess them. The United States Office of Education made research grants toward support of the project.

Identification of Skills

Framework. The framework for the entire project was provided by Havighurst (1952) who theorized that life is a long series of tasks to be accomplished.

> A developmental task is a task which arises at or about a certain period in the life of an individual, successful achievement of which leads to his happiness and to success with later tasks, while failure leads to unhappiness in the individual, disapproval by the society, and difficulty with later tasks (p.2).

Basic assumptions were: (a) the sequence of developmental tasks for blind children is essentially comparable to that for seeing children, (b) development of skills in orientation and mobility is a part of a blind child's early school experience, and (c) these skills can be identified and assessed.

Objectives. Primary objectives for the first phase of the project included the identification of developmental tasks relating to the young child's interaction with the physical environment, a description of the orientation and mobility skills required for achievement of these tasks, and identification of related learnings essential to their performance.

Procedure. The project staff made a comprehensive review of the literature on child development, blind children, sensory and perceptual aspects of orientation and mobility, measurement of motor skills and social competencies, and pertinent curriculum materials. Another important source of information came from observations of teachers. Over a 2-week period, six experienced teachers of blind children recorded skills and deficiencies exhibited by the children as they interacted with their environments.

Data were organized by listing age-typical behaviors in one column and the orientation and mobility skills implied by each in an opposing column. The staff employed the term *developmental referent* to designate the relationship. For example: at approximately three years of age, the child can ascend stairs, alternating the forward foot. The mobility skill implied by this developmental referent was stated similarly. A child of five or six can recognize specified landmarks. Use of stable, familiar features of the environment for orientation was suggested as appropriate expectation for a blind child. Skills so identified and organized formed a pool from which the scale items were drawn.

Construction of the Scales

The task of constructing an instrument to assess performance required that each item describe and define a specific behavior. The developmental framework required that items on each aspect of development be sequenced in one of three dimensions: prerequisite skills, reduction of assistance, or increased complexity.

Preliminary editions. The first edition of the scales, incorporating 288 items arranged in 58 sub-scales, was submitted to a jury of child development specialists, orientation and mobility specialists, and experienced teachers of blind children. Independently, the nine judges ranked each item for significance and indicated from a randomized presentation of items in each sub-scale an appropriate developmental sequence. Results guided revision and preparation of the scales for trial with 12 children.

The field trial was conducted by two examiners using a rudimentary manual and a kit of tentative test materials. This experience, along with jury judgment, provided information for further revision and the compilation of the experimental edition.

Experimental edition. During the second phase of the project, the staff achieved the following objectives: (a) revision of the preliminary draft of the scales, (b) preparation of a detailed examiner's manual, and (c) collection of reliability and normative data. Revision produced an experimental edition of 124 items arranged in 26 sub-scales related to movement in space, self-help, sensory cues, directions and turns, or formal precane techniques such as use of a sighted guide and trailing. A psychometrist was employed and trained by the project staff for the role of field examiner.

The norming sample is 173 children, ages three to twelve, from the major regions of the United States. The sample was representative of children enrolled in educational programs for the blind for sex ratio, type of program, and age-level frequency distribution. All subjects were totally blind or had light perception only. Age of onset was before the third year. None was retarded. Children with additional physical handicaps or emotional problems which might have interfered with their participation were excluded. The sub-sample of 41 subjects used in the reliability study resembled the total sample except for type of program and geographic region.

An item passed by 14 to 80 percent of the subjects in at least one age group met the criterion of minimal effectiveness. Items too difficult and too easy were thus eliminated, leaving 82 items for which tentative age norms were computed. Further refinement based on reliability data and consideration of construct validity resulted in the selection of the most effective items for the Short Form. Less discriminating items were preserved as instructional guides.

Short Form

Though the 24 Items of the Short Form were arranged in three categories, no attempt was made to sequence them into unidimensional sub-scales. The following material was reproduced from the final report (Lord, 1967).

DIRECTIONS AND TURNS

1. Responds correctly to a command to turn left
2. Correctly describes a familiar route in terms of right and left turns
3. Points out cardinal directions in a familiar setting
4. Travels a route with one turn described in terms of cardinal directions

MOVEMENT IN SPACE

5. Points toes in direction of travel while walking
6. Walks with relaxed gait
7. Walks up steps alternating forward foot, one foot per tread
8. Walks down steps, alternating forward foot, one foot per tread
9. Hops on one foot
10. Hops, alternating feet
11. Gallops
12. Skips
13. Runs freely by himself
14. Jumps off low wall or bench
15. Jumps, coordinating other body movements

SELF HELP

16. Demonstrates working parts of doors
17. Uses key to lock and unlock doors
18. Puts on sweater unassisted
19. Buttons sweater
20. Puts on sweater unassisted when one sleeve has been turned inside out
21. Puts on belt and fastens buckle correctly
22. Dials telephone numbers succcessfully
23. Identifies simple tools
24. Uses helping hand efficiently [pp. E2-E6]

Characteristics. When results for all age groups were combined, test-retest reliability coefficients were >.90. The index of internal consistency for the majority of items was >.70. Correlation of scores with age was moderately high (r = .69). Comparison of scores of totally blind subjects with scores of light perception subjects revealed significant differences between the two groups on 10 items. Differences favored the totally blind on the two items requiring use of cardinal directions and on the two items relating to doors. Performance of children with light perception was better on seven of the locomotor items. Boys in the total sample demonstrated significantly superior performance on demonstrating the working parts of doors, while girls were significantly better on left and right turns, skipping, and buttoning.

Discussion

Conclusions on the value of the scales for measurement are premature. One serious deterrent is the problem of comparable settings for administration. Another relates to the criterion for internal consistency, for a high index suggests global ability. If valid items were eliminated on this standard, skill in orientation and mobility reflects multiple abilities. Possibilities for research are numerous.

Implications for Teachers and Specialists

Teachers of blind children and orientation and mobility specialists and those responsible for guiding their preparation must cooperate in the development of this vital area of curriculum. The tendency toward polarization can only defeat our mutual purpose of teaching blind kids to function efficiently and independently. Perhaps a search for professional identity has obscured for the specialists the fact that they are basically teachers who profess a specialization, not a separate discipline. Orientation and mobility specialists frequently complain that their trainees lack basic concepts of the environment. Teachers, on the other hand, retort that these concepts are thoroughly developed in other areas of the curriculum. Many selections from the literature advise reassuringly that readiness for orientation and mobility instruction need not be planned or structured; opportunity for normal, every-day experience is sufficient. Such statements are gross over-simplifications of the problem.

With the help of specialists, teachers can broaden their knowledge of basic concepts of size, shape, and perceptions of space as they relate to independent travel and teach for transfer. Teachers can help specialists to recognize that the content of orientation and mobility instruction includes more than a particular collection of techniques and that the necessary matrix of experience is not acquired by most children through incidental learning.

Probably the most valuable contribution of the research at Cal State, L.A. was the identification of orientation and mobility skills and their developmental referents. Since they were defined behaviorally and sequenced developmentally, they are recommended as instructional objectives. Progress toward achievement can thus be quantified and stand as evidence of teaching.

In conclusion, I submit that every teacher teaches orientation and mobility in the same sense that every teacher teaches reading. As teachers, all of us must improve our skills in the identification and manipulation of those elements of each child's environment which motivate and reward his behavior. We must record and measure changes in the child's behavior, for then we can infer that learning has occurred. We are accountable.

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THE PERCEPTUAL BASIS FOR MOBILITY

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The ability to travel safely, comfortably, gracefully, and independently, referred to hereafter by the single term "mobility," is a factor of primary importance in the life of a blind individual. The blind person who fails to acquire this ability usually displays a life style characterized by passive acquiescence to conditions proposed and arranged by others. The blind person who has acquired this ability often displays a life style characterized by the execution of plans of his own formulation. Yet, until recent years, it was not generally recognized that mobility could be resolved into a collection of related sub-skills, and that these skills could be taught.

Dr. Richard Hoover's success in working with blinded war veterans is well known. From that beginning, fairly elaborate training programs have been developed for both trainees and trainers. The success of these programs is beyond question. Many blind persons have been emancipated from lives of passive dependence.

Although the effort to state practical training objectives, and to provide experiences which conduce to the realization of those objectives, has been rewarded with significant success, we still lack a general theory of mobility to guide us in the refinement of training methods and the design of information gathering instruments intended to assist mobility. There is much to be learned before such a theory can be formulated and tested. We must learn how to measure significant aspects of the total mobility performance in order to gauge the contribution of a wide variety of factors to that performance. Dr. Alfred Leonard, of Nottingham University, has made an impressive beginning in this regard. We must assess more effectively those conflicts in personal objectives that sometimes keep a seemingly capable individual from achieving satisfactory mobility. But first, we must arrive at a clearer statement of the perceptual operations, both sensory and motor, that underlie successful mobility. It is knowledge of this sort that will tell us what to train for when we train, and what information to display with the mobility aids we construct.

In order to understand better the task that confronts the blind pedestrian, making his way through an obstacle filled environment without primary reliance upon another individual, it may be instructive to compare his task with the task of a sighted person similarly engaged. When an individual walks, it is usually safe to assume that he has an objective; that he is going somewhere. In order to achieve this objective, he must make a succession of decisions about alternative courses of action, and to make these decisions, he must collect information. The sighted pedestrian easily obtains much more information than he needs to plot a successful course.

When the blind pedestrian negotiates an unfamiliar environment for the first time, it is quite unlikely that he will obtain enough information to plot a successful course on a second occasion. He must typically follow a given path many times in order to accumulate the information he needs in order to traverse it with comfort, speed, grace, and safety. Even when he has reached this level of mastery, the picture of the sector of the environment in which he is interested, that he can construct with the information he has accumulated, will be an impoverished picture, lacking much of the detail of the picture than can be constructed with the information obtained by the sighted pedestrian after a single contact with this environment.

Consider the following example. A blind pedestrian is walking along a city sidewalk. He is on his way to work, and he is following a course that he has followed repeatedly in the past. As he walks along, the feel of the ground under his feet gives him information which he can compare with stored information about the surface underfoot. This information might consist of observations of the following sort. The walk is constructed of brick. At this instant, it dips to form a slight trough. Immediately following, it rises above the normal level of the walk to form a small mound. Now it changes from brick to concrete construction, and a moderate downward slope sets in. If these observations match stored observations regarding the surface, the blind pedestrian knows that he is on course. He may, of course, receive stimulation from other senses from which he can obtain the information that he is on course. Let us suppose that his course takes him by a building that is immediately adjacent to the sidewalk. As he passes the building, he recognizes the familiar feel of the warm, moist stream of air from the exhaust fan of the laundry inside. A little further down the walk, he hears reflected sounds which inform him that a large object, that he knows from previous examination to be a tree, is to his right on the strip of ground that separates the sidewalk from the street.

The stimulation so far discussed has served to inform the blind pedestrian that he is on course. However, it is quite likely that at some point in transit, he will deviate from his intended course. When he does, he may receive stimulation containing information that does not match any of his stored information about the course, in which case he knows that he has departed from the course and that a correction must be made. To continue with the example, suppose he has been walking for some time without any indication that he is off course. The surface underfoot is hard, smooth, and level, as it should be, and he experiences no unusual smells or sounds. All of a sudden, he is brought up short by abrupt contact with an object which he determines, through rapid haptic investigation, to be a parked car. He now knows that he has departed from his intended course, and that he must make a correction. Because of past experience, he also knows that his error consisted of deviating slightly to the right, which caused him to enter the parking area of the filling station adjacent to the sidewalk. This parking area is smoothly paved with concrete, and its surface is continuous with the surface of the sidewalk. Consequently, he experienced no change in stimulation as he passed from the walk to the parking area. There may have been some auditory stimulation from which he could have obtained the information that he was abreast of the filling station, but the street to the left of the sidewalk is usually filled with traffic at this point, and its sound masks any other sounds that might serve as course indicators. However, because he has made this mistake before, he now analyzes the situation and knows what correction to make. He turns to his left and walks until his feet inform him of the sloping apron of the filling station's driveway. He then turns to the right, follows this apron until the walk levels out again at the boundary of the filling station, and he resumes his course along the sidewalk.

The first time he passed this way, he did not know about the filling station. On that occasion, he also deviated to the right and ran into a parked car. The collision informed him that he had departed from his course and that a correction was required but, because he lacked prior relevant experience, he did not know what correction to make.

There are a few important points to be gathered from the foregoing example. During the exhibition, the blind pedestrian obtains two kinds of feedback or system-regulating information; information that tells him that he is on course, and information that tells him he is off course. If he is off course, he may obtain information which specifies only that he is off course, or he may obtain information which also specifies the kind of correction required to bring him on course again. The informational value of the stimulation he experiences in course will depend, to a significant degree, upon prior experience with that course. The blind pedestrian cannot, during a single transit, obtain enough information from ongoing stimulation to specify his environment in sufficient detail so that he can plot a successful course, and he must therefore rely upon stored information. His memorial representation of the situation is, of course, affected by all of the errors that arise from imperfect initial stimulus registration, faulty perception, and forgetting.

According to the analysis just given, the blind pedestrian would have to depend heavily upon learning and memory in his exercise of mobility. He would perform poorly in unfamiliar situations, since he would lack the information needed to guide his performance. Performance meeting the criteria of successful mobility would come only after repeated trials on a given course. Fortunately, this dependence is substantially reduced by the redundancy in man-made environments. In the typical cityscape, for instance, certain features are repeated over and over again. On either side of the typical street, and running parallel to it, there is a sidewalk. This sidewalk is usually raised slightly above the level of the street. Frequently, but not always, there is a strip of unpaved earth between the sidewalk and the street. This strip is often planted in grass, and ranged along it, one will generally find trees, utility poles, sign posts, etc. The change from sidewalk to street level usually takes place abruptly, forming a step. The center of a street is almost always its highest elevation, and it slopes downward from the center, on each side, to the gutter. Buildings are usually arranged in rows in each side of a street, with the sidewalk interposed between buildings and street. In a commercial area, there is often no space between buildings, and they are frequently immediately adjacent to the sidewalk. In a residential area, buildings are usually set back from the sidewalk, and separated from each other. Other repeated arrangements could easily be mentioned.

The significance of this fact for the blind pedestrian is that when he finds himself in a situation with which he has not had previous experience, he nevertheless knows something about it. His information consists, in this case, of predictions of stimulation that he can expect to experience. It is, for instance, more likely that the sidewalk will be at a different level than the street, than that it will be separated from the street by a strip of unpaved earth. His willingness to treat a predicted state of nature as if it were an actual state of nature will depend not only upon his estimate of the probability associated with it, but also upon the attendant risks.

Consider, for instance, a blind pedestrian walking along a sidewalk in a busy, downtown area. There is so much traffic noise that he cannot learn much about his situation by listening. He must depend primarily upon his ability to obtain surface information. He wants to continue walking until he reaches the curb, and there to stop in order to collect the information he needs in order to decide when to cross. However, he also knows that although the boundary between street and sidewalk is almost always marked by a curb, at some downtown street intersections, there is no boundary that can be discovered by the feel of the surface underfoot. If he decides to act as if the predicted state of nature is the actual state of nature, the probability is small that he will not detect the street boundary. However, if he does not detect it, he may place himself in danger by walking into the stream of traffic. If he elects not to accept the risk, then he must consider alternative actions.

In the discussion so far, little mention has been made of the role played by sensory aids such as canes or electronic environmental sensing devices. Such devices will be useful to the extent that they enable their users to obtain additional information, relevant to the task at hand, and at a rate fast enough so that the attempt to use the additional information does not retard performance. The cane, for instance, when properly used, enables the blind pedestrian to extend the range within which surface information can be obtained. It also scans the space in front of him for obstacles. However, none of the mechanical or electronic sensory aids to the mobility process now known will so enrich the supply of information that the blind pedestrian can base his course decisions on contemporary information. Consequently, although a sensory aid may make it possible to obtain information that is unquestionably helpful, its use does not alter the situation enough to render the present analysis inappropriate.

The value of the sort of analysis attempted here, if it is valid, is that it suggests the questions which need to be answered in order to gain a better understanding of the mobility process. Increased explication of the mobility process should, in turn, make it possible to devise more efficient training methods, construct better mobility aids, and evaluate existing mobility aids more effectively. Here are some of the questions that might be examined experimentally.

1. What information is obtained by the sighted pedestrian that is relevant to the task of mobility? What are the sighted pedestrian's minimal informational requirements in relation to this task? How much redundance is there in the information he obtains, and how useful is this redundancy? Does he depend exclusively on the information present in visual stimulation? If not, what other kinds of stimulation does he process, and what is the relative importance of the information present to non-visual stimulation?

2. What information is there in the stimulation obtained by the blind pedestrian that is relevant to the mobility process? To what extent is the environment specified by the information available to the blind pedestrian? What are the relative contributions of auditory, haptic, and proprioceptive stimulation?

   How do blind and sighted pedestrians differ with respect to the involvement of memory in the mobility task? What distortions and deletions are present in a memorial representation of those aspects of the environment of significance to the pedestrian? How does a memorial representation based upon information obtained on a single occasion by a sighted pedestrian compare with a memorial representation based upon information obtained on many different occasions by a blind pedestrian?

3. To what extent do blind and sighted pedestrians differ with respect to their reliance upon environmental redundancy? What probabilities does the blind pedestrian attach to his predictions of the features of unexperienced environments? How do these estimates of probability affect his performance? What personal and situational variables influence estimates of probability and risk?

4. When the informational requirements for mobility without vision are known, it will be possible to undertake more sophisticated evaluation of devices to be used by the blind pedestrian for the purpose of obtaining environmental information relevant to the mobility task. A sensory aid either increases the discriminability of stimulation already processed by the individual in his search for information, or supplements this stimulation with additional stimulation. If its role is supplementary, it provides stimulation that is either immediately useful because it is like stimulation the individual can presently interpret, or not useful without perceptual learning, because it is unlike previously experienced stimulation. Which kind of sensory aid should be constructed will depend, in part, upon answers to the questions revealed by this classification. To what extent will the blind pedestrian be assisted by increasing the discriminability of stimulation he is already processing? How much more of his environment can be specified by enriching the supply of stimulation that is interpretable without further learning? If significant features of the environment are to be specified by stimulation that is initially meaningless, how much learning will be required before it can be processed at a useful rate?

5. The need for an answer to this last question is immediate and urgent. Sensory aids have been constructed which confront their intended users with stimulation that is initially meaningless. These devices have achieved only very limited usefulness, in spite of the fact that, in many cases, individuals were given what was judged to be intensive and prolonged training in their use.

The Kay Sonic Aid is a case in point. This device emits a narrowly focused beam of ultrasonic energy. When this beam strikes an object, some of the reflected energy returns to the Sonic Aid, where it is sensed and transposed to the audible spectrum. The audible signal contains information about the distance separating the Sonic Aid and the object at which it is aimed and, to some extent, information about the surface characteristics of that object. There is no information in the signal regarding the direction of sensed objects in relation to the Sonic Aid. However, since its beam subtends a fairly small angle, it must be aimed at an object in order to detect it, and the aiming response of the person holding the Sonic Aid produces proprioceptive stimulation which contains directional information.

Although the user of the Sonic Aid may require some training in order to obtain that proprioceptive stimulation, once obtained, it is immediately interpretable. The user has received practice in the interpretation of such stimulation since infancy. The situation is quite different with respect to the stimulation produced by the Sonic Aid itself. This stimulation is initially novel, and the information it contains does not specify distance and surface quality in the way in which they are normally specified. Under normal observing conditions, as a sound source is moved closer to or farther from the observer, the change in the location of the sound source appears to be directly perceived. The change appears to take place in the distal stimulus. Actually, of course, it is the change in the proximal stimulus that informs the observer about the change in the location of the sound source, but the inference about the distal stimulus is unconscious and immediate. However, when estimates of distance, and of change in distance are based on the stimulation provided by the Sonic Aid, it is the proximal stimulus that is experienced. The observer is aware of noting its significant features and of inferring the state of the distal stimulus that would be responsible for a proximal stimulus so constituted. This process requires time, and the result is that the rate at which information is obtained is too slow to provide the information needed to regulate mobility at a normal walking speed.

This state of affairs poses significant questions for researchers. Can any training experience be devised, the effect of which will be to transform the perception of the proximal stimulus, produced by the Sonic Aid or other similar devices, to the perception of the distal stimulus? If so, is the amount of training required practical, in consideration of the imposition that training makes on the lives of human beings? Is this an instance in which training, if it is to be effective, must be undertaken at an early developmental stage in the life of the individual?

6. Experience with the Sonic Aid raises additional questions that are likely to arise in connection with other sensory aids. Even after prolonged experience with the Sonic Aid, its signal is often ambiguous. Is this ambiguity the result of insufficient information in the stimulus to clarify further the state of nature assessed by the Sonic Aid? Is the ambiguity due to a failure on the part of the observer to perceive significant features of the stimulus? If so, how much additional learning will be required to make those features apparent?

Conclusion

An effort has been made to indicate many of the factors that would have to be taken into account in stating a theory of mobility, and some questions, amenable to experimental examination, were asked. The analysis of the task of mobility that was attempted, suggests a model in which the blind pedestrian's progress toward his objective is regulated by contemporary information and by stored information. Before this conception can achieve the status of a theory, however, research must be performed that will support a clearer statement of the amount and kind of information that can be collected by the blind pedestrian's available perceptual systems, and the cognitive strategies available to him in obtaining and utilizing this information.

PIONEERING WITH TIME-SHARING COMPUTER SERVICE AT PERKINS SCHOOL FOR THE BLIND

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Back in 1966, Dr. Edward J. Waterhouse, Director of Perkins School for the Blind, in speaking to our students in morning assembly, predicted that probably within ten years, Perkins would have a direct connection with a large computer and would be making extensive use of its service. He went on to suggest that very likely our business office would be applying this computer to some of its practices, that the principal's office would be finding it useful in matters of scheduling, and that, above all, our students would be using it freely in connection with some of their studies in the classroom.

Little did Dr. Waterhouse realize in 1966 what an accurate prophet he was. Early in 1969, a bare three years after the prediction, Perkins had a time-sharing connection with General Electric's Mark I Computer 265 through two teletype terminals stationed beneath our new Research Library. Here, two of our mathematics teachers and twelve of our senior high school students are learning not only how to program for the computer, but also how to present their programs directly to the computer and to interpret responses from it.

To understand the significance of these two computer terminals at Perkins, we must return for a moment to the prediction of 1966. When Dr. Waterhouse made his prediction, he was reflecting a growing awareness of the rapidly increasing importance of the computer in all phases of our economic and social life, including education. We were reading in newspapers and journals of the rapid invasion of business and industry by the computer. We were attending conferences and workshops where the application of the computer to scheduling in large school systems was being demonstrated and where the use of the computer in the classroom was even being promoted. Above all, we were learning that large numbers of blind people were finding highly remunerative employment as computer programmers.

When early in 1968, therefore, Mr. John Watt of General Electric Company approached us with a view to tying Perkins into General Electric's 265 Computer on a Mark I time-sharing basis on their new educational and rehabilitation program, he found us in a receptive mood. Although we had been learning a good deal about the use and spread of the computer in a general way, we found ourselves to be complete novices when it came to applying a computer time-sharing program to our own particular needs. Before we could commit ourselves to the rather heavy financial investment involved in this computer service, we had to establish some rather clear-cut justifications either in terms of educational values to our students or in terms of time and money-saving practices in other operations of the school, or both.

Establishing these justifications stimulated a good deal of careful thought, some inquiries into the workings of established programs, and not a little debate among a number of us. In the end, we arrived at certain conclusions which led us to accept the time-sharing service being offered by General Electric.

In the first place and, perhaps on the negative side, we could not find any immediate application of the computer service to expedite the processes in our business office; nor could we find any way immediately to use the computer to assist our principal in the many involved and complicated scheduling patterns in his office. We do recognize, however, that this present failure may be due more to our own unfamiliarity with the use of the computer and its versatility than to inappropriateness for our school operation. Indeed, we did anticipate an application of this time-sharing service to statistical processes in research in our Psychology and Guidance Department. Subsequently, our students carried out a rather useful set of exercises on the computer helping with the validation of the new Perkins-Binet Intelligence Test. As time and experience advance, we may well discover many fruitful applications of computer time-saving service to a variety of operations concerned with running our school.

Secondly, we concluded that this computer plan offered considerable promise as a tool in the classroom of some of the subject areas in our senior high school department. We felt that the application of the computer to classes in mathematics and science would be particularly effective both as a means of greater efficiency in the learning process and also as a means of motivating our students to greater interest and effort.

Finally, since it had already been well demonstrated that blind people can be highly successful vocationally as computer programmers, we concluded that we should give our students experience on the computer with a view to exploring both vocational interests and vocational aptitude.

In November of 1968, bearing in mind the conclusions enumerated above, Perkins signed a contract with General Electric Company for computer time-sharing service and a contract with the Telephone Company for service of two teletype consoles, and we were in business.

Almost at once, of course, as might be expected, problems began to arise. Just about every student in our Upper School wanted to get his hands on the computer. Class schedules for the school year 1968-1969 had been set long before and were not easily altered to allow for the effective use of the new tool. Compromises were necessary to glean the greatest value from the computer during the remainder of the school year. Two groups of six students each from the mathematics department were selected. Two of our mathematics teachers offered each group an evening of their time for computer work, and our principal found an additional period of time for each group during the classroom week. This gave us a nucleus of twelve students who could share active experience on the computer during two periods each week and who could do additional preparation work for the computer during other mathematics classes and during study hall periods.

A second problem area became identified in the fact that our mathematics teachers, although well equipped with the general mathematical background necessary for successful computer operation, had not been trained in the use of the computer itself much less in the techniques of teaching the use of the computer. Mr. Robert Streight of the General Electric Educational Staff took this problem in hand and offered our teachers guidance and instructional time at the General Electric Educational Installation, in Wellesley, Massachusetts. He also provided our teachers with the necessary manuals and supplementary exercise material which our teachers could use with our students. With these aids, together with a considerable amount of imaginative planning on their part, the teachers have been able to present our students with a program of instruction using the computer which appears to be of merit. At least our students have been able to unravel involved mathematical problems using the computer. They have been able to construct programs, they have been able to operate the machinery, and they have displayed a great deal of enthusiasm.

Perhaps a more serious problem in using the computer at Perkins arises from our present failure to have a Braille Printout for our blind students to use. This means our blind students must depend upon the eyes of their teachers to read back to them the information that comes from the computer. Only in one or two cases do the students have enough vision to read the print characters. This in our minds, of course, is a serious flaw as far as our computer program is concerned. The lack of Braille Printout, in fact, almost caused us to postpone our venture into computer programming in the very beginning. Mr. Watt indicated to us, however, that General Electric was working hard to devise a system of providing Braille Printout and hoped to have a satisfactory system shortly. In fact, he showed us a metal thimble-like attachment to be placed on the teletype machine which would produce a tape of Grade I Braille. Subsequent tests for this thimble, however, produced Braille of such a poor quality that it was not usable.

For a time, it appeared as if our computer training program would be doomed to complete inadequacy before it was begun for the lack of a Braille means to make our students completely independent in the use of the machinery.

At this point, it seemed clear to us that we had a choice of alternate courses of action. Either we must drop this experiment in the use of the computer with our blind students or we must take the initiative ourselves in a true pioneering spirit and organize the resources necessary to provide us with a Braille Printout for our blind students. Rarely has Perkins sidestepped the issue when a pioneering effort was found necessary. This case was no exception.

First of all, we decided we needed working with us a highly trained technical expert in this field of computer operation.

Mr. Robert Gildea, Systems Analyst for the MITRE Corporation, a blind man himself and highly successful in his field, seemed a logical choice, offered himself, and has become our consultant. Mr. Gildea was able very skillfully to review with us possible solutions to the securing of a Braille Printout on our time-sharing plan with General Electric. Under his guidance and with the help of a number of other technical experts in this field, we decided to support two separate systems proposed to provide us with a Braille Printout. The first of these is the system being developed by the Sensory Aids Division, Evaluation and Development Center, Massachusetts Institute of Technology under Mr. Vito Proscia. The second is that of Mr. Ray Morrison, recently retired from the Telephone Company, who has ingeniously adapted several pieces of equipment to produce a Braille Printout on a time-sharing type of equipment we have at Perkins. The MIT System, although rather expensive to duplicate, has the advantage of being funded from Federal sources which promises us at Perkins rather inexpensive operation at least during an experimental period of time. Mr. Morrison's System, on the other hand, must be funded privately, and Perkins has made a sizable financial contribution to this end. At the present writing, the MIT System would provide the blind operator with a printout in the form of a sheet of Braille which would be rather easy for him to control. Mr. Morrison's printout, at the present time, however, would be in the form of a tape which has some disadvantages in terms of handling and storage.

We at Perkins have been promised our copy of Mr. Morrison's System very shortly. We understand, furthermore, that Mr. Morrison is already working on further modification that will make it possible to provide a Braille Printout in sheet form this month. We are also promised an experimental model of the MIT System as soon as it is ready for use. This will give us at Perkins an opportunity to test, side by side, in our computer time-sharing installation, the relative merits of the two systems.

WHERE DO WE GO FROM HERE?

Our early pioneer experimentation with this computer time-sharing program seems to have been a fruitful experience. We know that it can motivate students in our mathematics and science classes, and that it can render more effective some of the learning processes there. We know also that our blind students can acquire some skill in operating the computer through a teletype terminal and that they can successfully perform exercises in simple computer programming. There are a number of problems facing us, however, that we are not certain we have yet solved adequately.

The first, of course, is the question of the effective Braille Printout. Although we are promised with considerable optimism two systems of Braille Printout for our equipment, neither of these have yet been tested with our students. The MIT System appears to be still a bit in the future. Mr. Morrison's System, although just about ready for use, has the slight disadvantage of being a narrow tape and will require considerable testing. We are encouraged to believe that both of these printouts will be very useful to our blind students. We will certainly be seeking every way we can find to improve this printout and will welcome suggestions from others in the field.

Another question in our minds has to do with the course outlines and manuals to guide both our teachers and our students as they learn to program and to operate our computer. At present, we are following course instructional outlines furnished by General Electric Company. One of these course outlines that seems to be most effective with our students is called "Introduction to the BASIC Language." As yet, however, our teachers have not had enough experience to know conclusively whether or not they are providing our students with all of the step-by-step instructional material necessary to make them competent computer programmers. We are interested in hearing from other instructors in this field who may have suggestions as to how we may improve our course offerings in this important field since we would like to give our students as complete a training course as possible. A further problem is the securing of adequate manuals and course materials in Braille. As yet, we have not been able to examine either manuals or course materials that may already exist in Braille. On the other hand, we do not wish to undertake the great expense of putting materials of this kind into Braille unless we are certain we are considering the most effective materials for our course. Here again, we welcome suggestions from more experienced workers in this field.

A further question in our computer future, we believe, has to do with possible evaluation materials that would help us to measure reasonably accurately the potential of our students for vocational success in the computer field. If, through a battery of tests, either in the very beginning or at least after a short introductory training course in the computer, we can predict which of our students are likely to succeed as computer programmers and which are likely to fail, we can counsel our students accordingly and prevent a good deal of wasted effort on the part of a number of them. We know, of course, of a few of the important requirements for success in computer programming, but we are led to believe that there are other factors not as easily identified. This area of early evaluation is of considerable interest to us and again we welcome any suggestions.

EVALUATION OF INTELLIGENCE, ACADEMIC APTITUDE AND ACHIEVEMENT OF THE VISUALLY IMPAIRED

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When defining the terms, intelligence, academic aptitude, and academic achievement, we will not explore the various theoretical points of view in depth. The terms are psychological constructs which are being investigated and debated. The concepts are closely linked; for that reason, distinctions are sometimes semantic and confusing. For purposes of this discussion, the more traditional distinctions will be made, never questioning nor denying the validity of other paradigms.

Intelligence is a general ability or potential for learning, comprising an array of specific abilities. Academic aptitude describes several of the components of this general ability which are specifically related to the potential for school learning. Achievement represents accomplishment, after training, without intending to estimate potential. There is obvious overlap of these concepts.

In addition to thinking of intelligence as a general ability representing a variety of specific aptitudes, it also has several other characteristics which will be assumed: (a) it is innate, (b) it has variations in both quantity and quality from individual to individual, (c) as a potential it is constant in each individual, (d) the utilization or expression of the potential is subject to a host of influences, carnal and environmental. A few of the components or specific aptitudes commonly assumed to be subsumed within this general ability are (a) memory, (b) the ability to see relationships, (c) the ability to make generalizations from specific information, (d) the ability to organize ideas in symbolic form.

INTELLIGENCE TESTS

The difficulty in defining intelligence as distinct from aptitude and achievement, is compounded by limitations of measuring instruments. In general, the measurement of intelligence is an indirect measure. It is a sampling of the product of abilities at a given time, place, and circumstance, on which assumptions about inherent abilities are based. An effort is made to choose intelligence test items which are common to all members of our culture in a variety of subject and ability areas which are not influenced by previous formal learning. While efforts in this direction have brought improvement in psychological measurements, the effects of experience and innate capacity have not been strictly separated.

Intelligence tests are thus assessments of present general abilities on which predictions of future learning may be made. Aptitude tests assess specific abilities on which predictions in specific areas may be made. An achievement test is an assessment of past learning, usually after formal instruction. Any measure of ability is to some extent an aptitude test, and to some extent an achievement test. Despite all efforts, the intelligence test predicts future academic performance better than its predictions in any other area, chiefly because of the highly verbal nature of many intelligence tests.

The limitations of intelligence tests, in general, present themselves as obstacles in the measurement of intelligence of the visually handicapped. Experiences assumed to be common to the entire population are not common to, or are different in quality among, the visually handicapped. Many of the so-called common experiences depend specifically on vision. Others are indirectly dependent upon vision in that a certain freedom of independent mobility is assumed in order to have opportunity at the general and common experiences. This says nothing about the possibility of experiential limitations based upon overprotection or the influences of other emotional reactions or concomitant disabilities which may be associated with visual loss though these often are contributing factors.

The modes of assessment of intelligence are generally limited to the visual or aural-oral media, or through assessment of manipulative skills. Two of these evaluation modes are either blocked completely or hampered to some indefinite extent by the visual loss. The aural-oral mode is chiefly limited to verbal communication, largely obviating adequate assessment of many aspects of intelligence and accentuating the aptitudes most closely related to academic potential. There may be a difference in the quality of an experience received solely or chiefly through sound in the partial absence of other kinds of related stimulations. Similar limitations occur in achievement testing.

There is the need to exhaust all efforts to assess every potential possible among the visually handicapped, so that we might improve instructional techniques for the purpose of maximizing achievement in each, with the hope that opportunities for attainment and self-expression may be broadened. There are differences in potential which need to be taken into account, and perhaps undiscovered aptitudes which might be trained to the benefit of each individual.

Most psychological tests for the visually handicapped are either tests used with the normally seeing population, or adaptations of them for use with the blind, though there has been notable work in designing new tools for specific use with the visually limited. Adaptations of tests for the general population typically involve alteration or substitution for test items which require vision, with restandardization of the test on a visually handicapped population. Without special care, such alterations change the test so that the interpretation of the results obtained on the adaptation cannot be compared with the results on the original scale. On the other hand, the use of tests for the general population without adaptations assumes equivalent experience and does not take into account limitations imposed by the visual loss. Thus, these limitations are placed on the assessment of innate potential.

Other technical difficulties related to test construction, in general, further complicate psychological assessment. Intelligence tests yield quantitative results in terms of the intelligence quotient, or I.Q. While the I.Q. of 100 is the most common or the average I.Q. among various tests, the distribution of scores above and below are not exactly the same and may be based on different mathematical and theoretical formulations. Direct comparison from test to test is a bit like comparing yards and meters, without calculating or estimating the differences between the scales.

The Binet scales, the more commonly adapted individual intelligence scales, are age scales. Items are arranged in ascending order of difficulty and so arranged that fifty per cent of the population at each age level is expected to pass all of the items indicated for the age. Various kinds of items appear at each age level on the test. Hence, the concept of Mental Age, from which the proportional I.Q. (Mental Age, divided by chronological age, multiplied by one hundred), is obtained.

The Wechsler scales, the Verbal Scales of which are frequently used in intelligence testing of the visually handicapped, need no adaptation. These scales are divided into subtests representing types of tasks, each arranged in order of ascending difficulty, (Information, Comprehension, Arithmetic, Similarities, Vocabulary and Digit Span). There is no comparable Mental Age; the I.Q. is statistically based upon the so-called normal curve in what is known as a deviational I.Q. (This is a measure of a kind of average deviation, plus or minus, from the most typical score, 100).

Both the age scales and the subtest scales of different abilities yield useful information, but their dissimilarity leads to problems of comparibility. The 1960 revision of the Stanford-Binet adopted the deviation I.Q., but retained the age scale. The technical differences lead to differences in procedure in test administration which introduces other discrepencies between the two widely used intelligence tests.

Only the Verbal Scale of the Wechsler Scales is useful with the totally blind. The validity of the use of any of the Performance Scale subtests with the partially seeing is open to question. A relatively high performance on Block Design might help confirm findings on Verbal Scale and other tests, or tend to rule out the probability of organic brain damage; but, a relatively poor showing on that subtest is not very useful since the extent low vision contributed to the low score cannot be determined precisely.

Relying on a Verbal Scale I.Q., only the segment of abilities most useful in academic achievement predictions is available to us. The scales do offer some comparability of functional intelligence with that of the normally seeing, though experiments suggest that these scales do not measure innate abilities of the visually handicapped as adequately as they might those of the normally seeing. The Wechsler scales are familiar tools and available to psychologists who may need to evaluate an occasional visually handicapped individual; whereas specially adapted tests would not likely be so.

The Comprehension, and perhaps the Similarities and Vocabulary subtests of the Wechsler scales might be expected to be a little lower than would be expected of the normally seeing population: the Digit Span subtest is likely to be higher among the blind than among the general population. Perhaps each of these tends to cancel out the effects of the other. When the results are greatly affected by prorating Digit Span, it may be useful to report the I.Q. both with and without the subtest.

The adaptations of the Binet scales offer some performance items, particularly at the younger ages. As is the case with the general population, the Binet scales are particularly useful in evaluating the very young or the retarded; while the Wechsler scales may be considered to have particular advantage when used with older children and adults.

Solving the many problems has been the outstanding work of several people, some of whom are at this conference. Among those are Mrs. Mary K. Bauman and Mr. Carl Davis. The recent standardization of the Perkins Binet Test of Intelligence for the Blind, by Mr. Davis and his assistants, presents a new and well designed instrument which will be worthy of much discussion when it has had a history of general use.

In 1914, the Irwin Binet, and in 1942, the Interim Hayes-Binet scales were standardized on populations of blind children. Remarkable instruments at the time, the Perkins-Binet Test of Intelligence should reduce many shortcomings of previous scales.

Mr. Davis' Binet adaptation is based upon items in the latest revision of the Stanford-Binet Intelligence Scale which in 1960 eliminated the least useful items in the 1937 scales. Two adaptations were presented, one for the totally blind, and another for those with useful vision. The standardization population is more representative nationally, across age groups, and includes children who do not attend residential schools. The scale for those with useful vision extends from age three through age eighteen; and for those who are totally blind from age four. Performance items using tangible or enlarged materials are included. A test so constructed should be expected to give the most reliable and valid estimate of the largest variety of inate abilities yet possible with the visually impaired.

By shifting items, typically to higher age ranges for many of the performance items and downward for some of the verbal items, (a more extensive shift was necessary for the scale for the totally blind), the effects of vision loss upon the test results should be more nearly eliminated. This should result in a more stable I.Q. on retest, more reliably rank visually handicapped children, and enhance the predictive powers of the instrument.

The Perkins Binet lacks the half-year scales for preschool children provided on the Stanford-Binet. Thus, there are fewer items the young or retarded child will have a chance to attempt. This, of course, is likely to reduce the reliability of the scale at that age and ability range. Standardized on the visually handicapped, it lacks some of the elements of comparibility with the general population. It is an instrument less likely to be available to many psychologists who see only a few visually handicapped children in the course of their career. It is, of course, more cumbersome to administer than is the Verbal Scale of the Wechsler tests. The Perkins-Binet Test of Intelligence for the Blind should become a major instrument, particularly in diagnostic centers, agencies, and schools for the visually handicapped. It should be correlated with the Wechsler scales to help gain a better understanding of the two instruments. Both instruments should continue to be used with confidence, retesting frequently, noting some of the problems mentioned above and elsewhere.

Little has been said about performance tests for the visually handicapped. Relatively speaking, a small number of psychologists use a limited variety of performance tests with blind preschool and school-age groups. The Non-language Learning test, devised by Mary K. Bauman, roughly for ages ten and older measures the placement of forms into a board on three trials and gives a measure that is useful in predicting learning and job performance with concrete tasks. It may be said to be culture free. Somewhat similar tasks are included in the Perkins-Binet. Certainly more tests of this kind for children are needed.

The Haptic Intelligence Scale for the Adult Blind, published in 1964 by Schurrager and Schurrager, is useful at age sixteen and older. It was designed to be the equivalent of the WAIS Performance Scale. According to Sterfield and Avery, the HIS is more useful in predicting grades for the totally blind than the partially seeing. In combination with the WAIS Verbal Scale, the HIS contributes nothing to grade predictions. Subtests include DIGIT SYMBOL (matching design to numbered design in key), OBJECT ASSEM-

BLY (block, doll, hand, ball), BLOCK DESIGN, OBJECT COMPLETION (missing part identified), PATTERN BOARD (reproduce peg patterns), and BEAD ARITHMETIC.

SOCIAL MATURITY

The Maxfield-Buchholz Scale for Blind Pre-School Children is an adaptation of the Vineland Social Maturity Scale. The items of skill and self-help are delayed for the blind, relative to the norms for the normally seeing. The scale is useful below the age of six when parents assist in reporting skill achievement. Though not an intelligence scale, it is suggestive of intellectual functioning.

SCHOLASTIC APTITUDE TESTS

The School and College Ability Test (SCAT) has been adapted, for large print and braille, in a way that makes results directly comparable to results obtained by the normally seeing. The work was done by Carl Davis in cooperation with the publisher, Educational Testing Service. The test is useful from grade four through college sophomore levels. A verbal, quantitative and total score is designed to measure developed skills, and predict school achievement. Scores are reported as standard scores, and are thus comparable from grade to grade. Scores may also be converted into percentile bands for the appropriate grade. Technically, this is a well devised and standardized test which was adapted with particular ingenuity and care. More study and experimentation with it should be conducted and reported.

The Scholastic Aptitude Test, for high school juniors and seniors, is available in braille and large print from the publisher, Educational Testing Service. Standard scores for the Verbal and Mathematical sections are available in each media. More follow-up study showing the predictive value of the obtained scores might well be conducted. From general observations, it seems a satisfactory instrument in predicting college success among the visually handicapped. The SCAT should be a predictor of SAT results.

The American College Testing Program (ACT) is available in large print and braille from Science Research Associates. The battery consists of four tests of general skills in English, Mathematics, social studies, and science.

The National Merit Scholarship Qualifying Test is also available in braille from Science Research Associates. It yields standard scores in five academic skills. It is a standard for scholarship awards.

The Graduate Record Examination has been made available in braille from Educational Testing Service. It may be required for graduate school entry.

ACHIEVEMENT TESTS

Numerous achievement tests are available in braille and large print. A few are worthy of particular note because of their extensive use and study, or because of unique features.

Stanford Achievement Tests, available at the American Printing House for the Blind, have undergone revisions, adaptations, and study, beginning with the work of Samuel P. Hayes, 1941-1943. More recent experimentation has been carried out by Davis and Nolan. The tests are useful in grades two through ten for measuring learned academic skills. Several problems in evaluating the visually handicapped are incompletely resolved.

Blind students more frequently score relatively low on measurements of mathematical computation. Inspection of the problem suggests that the mechanics of setting up problems in braille hamper both instruction and measurement in this area. Intelligence tests related to arithmetic skills suggest that blind students have the potential to learn comparably, were it not for such problems in math.

Reading speed for braille and large print is typically slower than for regular print - how much slower, for which pupils, with what degree of visual limitation, is not well established. Since achievement tests are essentially power tests, extended time or oral administration of some subtests are common practice. The oral method is credited with inflation of test results. Corrective subtraction of a number of points is sometimes made a part of the scoring system. This leads to the question of how large this correction factor should be, and whether the same corrective deduction should be appropriate for all individuals. Allowing extra time lengthens test administration and adds to the burden of test administration.

Despite shortcomings, test results are useful in evaluating school learning, nevertheless.

Another interesting achievement test is the Sequential Tests of Educational Progress (STEP). Like SCAT, scores are reported in percentile bands, presenting a test profile. There are seven subtests appropriate for grades four through fourteen. Among these is a test of listening comprehension which is read by teachers to normally seeing as well as to blind students. As with the SCAT, Mr. Davis and Educational Testing Service together did an outstanding job of adapting this test for the visually handicapped. While some questions about methods of administration will arise in subtests other than the Listening test, comparable standardization and score reporting make it both a useful measure of achievement and a helpful measure for studying the nature of the visually handicapped population and their learning traits.

PROBLEMS AND SOLUTIONS

Test development for the visually handicapped is seriously hampered by the small populations on which tests are sometimes standardized or studied. Another factor is the common lack of systematic evaluation programs; this is probably more true in public school programs for the visually handicapped than for residential school programs. Perhaps there should be a recommended systematic program of testing that might be followed nationally in all kinds of programs. An authority or even a service might be established to score or receive scores from test administrations nationally. Other relevant information should be collected, such as eye pathology and acuity, secondary disabilities, and the like. Useful information relative to learning and teaching could be generated. There is no real substitute for knowledge based on good data at the time of decision making.

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EMOTIONAL DISTURBANCE & SENSORY DEPRIVATION - A POSSIBLE RELATIONSHIP

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I would like to begin my talk this afternoon by reading a poem by a totally blind adolescent boy at the Indiana State School for the Blind:

> The winds rise and black snow falls,
> The waves of black roll on and in,
> The water's cold and the air much colder,
> Here on the Gulf of Darkness we stand.
> Where can we go?
> Nowhere.
> What can we do?
> Nothing.
> It is December.
> There is no sun.
> It is 11:00 o'clock,
> At midnight it is done.
> The land is vast and black behind,
> The gulf is vast and black ahead,
> The waves roll on and in.
> All hope slips and slides --
> Into the Gulf of Darkness.

This sense of despair, hopelessness, and fear of venturing into the world represents feelings frequently expressed by visually handicapped youngsters. This adolescent boy aptly describes his sense of frailty in the relationship between himself and his vast, unknown, unexplored environment.

During the past six years while I have served as consultant for the Indiana State School for the Blind, I have been impressed by the number of emotionally disturbed children. Some children describe themselves as chronically sad, lonely, isolated, rejected, and unloved by anyone. They depict themselves as inadequate or of little value. They describe crying spells and wish that they had never been born since the future seems essentially hopeless. Yet, although these children may express such feelings about themselves and their lack of interpersonal relationships, usually they do not have suicidal thoughts or suicidal attempts. Other children seem even more inappropriately related or, indeed, unrelated to the world around them. These children are socially withdrawn and isolated. Even at the school they need to be frequently prodded and stimulated in order to be responsive to their social environment. Their thoughts are predominantly preoccupied with fantasies of aggression which are usually directed towards themselves by real or imagined people. They perceive the world as so dangerous that it is only with excessive anxiety and the defensive use of fantasy that they are able to interact with people around them and learn in the classroom.

The necessity for constant interaction between the individual and his environment is no more graphically demonstrated than in the visually limited child. Every child, whether blind or sighted, needs a continuing feedback from his environment to help him evaluate his experiences from which he can, in turn, develop ideas of a reality where he can predict and anticipate events.

During the past 15 years, a number of investigators have been interested in the development of the blind child: his use of hearing and kinesthetic perception as alternative sensory modalities for learning; his development of gross motor behavior and hand movements; his evolution of a self-concept and an object world and his understanding of human interpersonal relationships. The basic question as to whether a child who is deprived of vision from birth can ever achieve mature personality structure is a theoretical one. The psychoanalytic literature has stated that, lacking the continuity with the environment afforded by vision, the blind child consequently directs his attention to his own body experiences. He may be abnormally content to be left alone and indulge in repetitive self-stimulating movements. Yet the blind youngster's development can be modified by suitable mothering and early auditory and kinesthetic stimulation. Unfortunately, he often receives less stimulation because of his mother's reaction to his deformity and the difficulty she experiences in making contact with him because of her depression. Furthermore, a premature infant who is incubated, is deprived of mother and receives less auditory and kinesthetic stimulation.

This paper reports a preliminary study of the relationship between the presence of emotional disturbance in visually handicapped children and their experiences of primary and secondary sensory deprivation. I differentiate between types of sensory deprivation in the following way.

Primary sensory deprivation is defined as total blindness, therefore, there is no sensory input of vision. There are two types of secondary sensory deprivation experiences. The first type of secondary sensory deprivation experience results from the decreased auditory and kinesthetic stimulation during the first few months of life which occurs because the child is premature and incubated. The infant's mother does not have an opportunity to touch, hold or feed him. The second type of secondary sensory deprivation experience is a social deprivation experience. This sensory deprivation experience occurs with the disruption of the family unit through separation, divorce, or death. The child then has many and varied social environments to which he must adjust and for which he may be less capable of adjusting because he is blind.

In primary sensory deprivation, the source of deprivation is within the infant himself. He lacks the sensory end organ, his eyes, which would provide sensory input. In secondary sensory deprivation, the source of deprivation is external in the environment. The first type of secondary deprivation is a decreased amount of auditory and kinesthetic stimulation as a result of incubation. The second type of secondary sensory deprivation is a variable, changing overload of social stimulation which occurs with the disruption of the family unit.

The nature of the impact of the sensory deprivation experiences upon the child's social behavior - especially in perception and communication - has been recognized for at least 30 years. Orton (1937) theorized that several handicaps in the same child potentiate each other, which multiplies the secondary social behavior problems. Shirley (1939) in discussing prematurity and its effect upon child development, commented "that the premature ejection of an individual into a world he has not grown to fit may have lasting social and emotional consequences."

In 1958, Keeler reported on five totally blind pre-school retrolental fibroplasia children. He described the children as being autistic: socially self-isolated, lacking appropriate use of language for communication, relating to objects primarily by taste and smell, and manifesting repetitious non-functional blindisms or body movements. He postulated that their deviant personality development was due to a combination of total or severe blindness in the first few weeks of life and emotional neglect in later infancy. He felt that the two factors together acted as an inhibitory force to the potential personality development of the infant.

POPULATION CHARACTERISTICS

The author studied the children at the Indiana State School for the Blind. The population has remained essentially stable with approximately 200 children enrolled annually during the past six years. These children comprise approximately one half of all legally blind children in the state. Most of the totally blind children are enrolled at the State School. The children are generally from a lower middle class background with 70% of the children from blue collar or farm families. Thirty percent of the mothers work.

There is a wide range of intellectual capability since the school enrolls children who may be initially untestable as well as children with intelligence quotients in the 150's. The mean IQ at the school is 103.

I. Epidemological Description of the Population

# of Children	Percent	Characteristics of Sample
185	100	Total Population
82	44	Children with Significant Problems in Emotional Growth and Development
60	32	Children with No Vision. (No light perception)
34	57	Totally Blind Children with Significant Problems in Emotional Growth and Development

# of Children	Percent	Characteristics of Sample
13	38	Totally Blind Children with Symptoms of Depression
9	26	Totally Blind Children with Symptoms of Psychosis
12	36	Totally Blind Children with Other Symptoms
48	38	Visually Limited Children with Significant Problems in Emotional Growth and Development
14	29	Visually Limited Children with Symptoms of Depression
7	15	Visually Limited Children with Symptoms of Psychosis
27	56	Visually Limited Children with Other Symptoms

The author was able to categorize every child in the current school population since each child receives a psychiatric evaluation as part of the admission procedure. In addition, any child manifesting school learning problems also receives a psychological evaluation.

The symptoms of depression and psychosis were described at the beginning of the paper. The Other Symptoms category included children with active aggressive behavior characterized by verbal and physical attacks on others and destruction of objects; inappropriate homosexual and heterosexual behavior; passive dependent behavior with infantile dependency and little intellectual or physical motivation; and separation anxiety with constant thoughts about home and family accompanied by somatic complaints which were usually gastro-intestinal symptoms.

II. Primary Symptoms of Children in Each of Four Classifications of Sensory Deprivation Experience

Vision

Type of Deprivation Experience

Numbers of Children:	Depression	Psychosis	Other Symptoms	No Symptoms	
Vision	8	3	11	59	
Vision and Prematurity	3	0	1	7	
Vision Prematurity & Social Disruption	0	1	1	1	
Vision and Social Disruption	3	3	14	10	
	14	7	27	77	
Boys	9	4	13	45	Total 71
Girls	5	3	14	32	Total 54

Table II (continued)

No Vision

		Primary Symptom				
Type of Deprivation Experience	Numbers of Children:	Depression	Psychosis	Other Symptom	No Symptoms	
	No Vision after Birth	1	0	1	4	
	No Vision at Birth	2	0	3	10	
	No Vision and Premature	6	2	4	8	
	No Vision Premature and Social Disruption	4	4	2	2	
	No Vision and Social Disruption	0	3	2	2	
		13	9	12	26	
	Boys	7	6	5	11	Total 29
	Girls	6	3	7	15	Total 31

Each child is represented only once in Table II.

The clinical, experimental, and theoretical reports in the literature led the author to believe that a sensory deprivation experience would adversely affect the emotional development of visually limited children. Thus, each child was classified according to his primary symptoms and sensory deprivation experience or experiences. The effects of primary and secondary sensory deprivation were then analyzed within the context of the following hypotheses.

HYPOTHESES

I. Primary Sensory Deprivation

1. A child totally blind from birth would be more likely to have symptoms of emotional disturbance than a visually limited but not totally blind child.
2. Severe signs of emotional disturbance, depression and psychosis, would occur more frequently in the totally blind child than in the visually limited child.

II. Secondary Sensory Deprivation

3. A premature and incubated child would be more likely to have symptoms of emotional disturbance than a full term child.
4. A visually limited child, who is both premature and incubated, would be more likely to have symptoms of emotional disturbance than a full term, visually limited child.
5. The visually limited child, who experiences social disruption, would be more likely to have symptoms of emotional disturbance than a visually limited child from an intact family.

III. Combined Primary and Secondary Sensory Deprivation

6. A totally blind, premature and incubated child would be more likely to have symptoms of emotional disturbance than a totally blind, full term, child.
7. A premature and incubated totally blind child would be more likely to have symptoms of emotional disturbance than a visually limited, premature and incubated child.
8. Severe signs of emotional disturbance, depression and psychosis, would occur more frequently in the totally blind, premature child than in the totally blind, full

term child.

9. A totally blind child who experienced social disruption would be more likely to have symptoms of emotional disturbance than a visually limited child who experienced social disruption.

In essence, the hypotheses state that the type (primary or secondary) and number of sensory deprivation experiences which a child encounters, will be reflected in the presence and degree of emotional disturbance.

RESULTS

The hypotheses regarding the primary symptoms of the children and their relevance to sensory deprivation experiences were analyzed using the Chi square method. The only significant statistical analyses related to prematurity with incubation; the combined effect of prematurity with incubation and total blindness; and the impact of social disruption upon the visually limited child. Therefore, the following hypotheses were found to be valid.

A premature and incubated child would be more likely to have symptoms of emotional disturbance than a full term child. The Chi square was significant (P = 0.01).

A totally blind, premature and incubated child would be more likely to have symptoms of emotional disturbance than a totally blind, full term child. The Chi square was significant (P = 0.05).

The visually limited child, who experiences social disruption, would be more likely to have symptoms of emotional disturbance than a visually limited child from an intact family. The Chi square was significant. (P = 0.01).

Presence or absence of vision, as a single sensory deprivation experience, was not a significant factor predisposing these children to deviant emotional development. Also, the experience of prematurity with incubation for a visually limited child was not a significant factor leading to later problems in personality structure. Finally, the totally blind, incubated child had no greater potential for symptoms of emotional disturbance than the incubated, visually limited child.

DISCUSSION

This study supports the hypotheses and the clinical evidence in the literature suggesting the high probability of emotional disturbance in all visually limited children. The high incidence (44%) of the children with significant symptoms of emotional disturbance, has been reported by other state schools for the blind. Furthermore, if the incidence of emotional disturbance in visually limited children is compared to the usually accepted 10 to 12% incidence of emotional disturbance in school children, then visually limited children are four times more likely than sighted children to have symptoms. The professional needs of such children far exceed the usual resources of a school for the blind. Schools must have mental health professionals to work in conjunction with teachers, houseparents and other staff. The Indiana State School for the Blind employs a psychologist, psychiatric social workers, a consultant child psychiatrist, and utilizes available psychiatric outpatient clinics.

This study further emphasizes the fact that problems in emotional growth and development begin long before the child enters school. It has identified possible sources important in the etiology of emotional disturbance in these children. Prematurity which necessitated incubation was the only single sensory deprivation experience which strongly predisposed all the children towards deviant emotional development. In fact, serious psychopathology, psychosis and depression, was significantly more frequent than other symptoms in the premature child ($P = 0.05$). As Wiener has pointed out in his careful review of the literature, prematurity and incubation do significantly increase the possibility of disturbances in personality structure. Socially and economically, the children in this study resemble studies of premature infants where the incidence of low birth weight has been reported to be greater in lower-class families.

The studies of mothers' attitudes toward premature children (Wiener, Smith et al), did not reveal a significant difference in the mothers' feelings and attitudes toward their premature infants when compared to mothers' feelings and attitudes toward full term infants. The attitudes of the mothers of the children in the present study were unknown. There may be a difference in maternal attitude if the mother is confronted with a visually limited child irregardless of his prematurity or amount of vision. A significant number of mothers may have had a negative attitude toward their children. But, if this is true, then all of these children would be equally likely to be affected by such an attitude.

Total blindness from birth had no greater effect than limited vision upon the child's development. These results were unexpected. The seemingly inherent stress and anxiety of total blindness in perception, organization and understanding the environment were thought to be overwhelming for a child who had never seen. It may be that such children who are with their mothers from birth are able to compensate through the auditory and kinesthetic modalities and establish a primary relationship.

The visually limited child was more likely to be significantly affected by social disruption. It may be supposed that he has developed the strongest emotional ties with his parents. It is the author's clinical impression that the visually limited child often experiences excessive and prolonged physical contact with his parents. These children relate fantasies of being the destroyer or savior of the parents' marriage.

The visually limited child showed compensatory capabilities in making contact with his environment. Symptoms of emotional disturbance were no more frequent in the incubated, visually limited child than in a full term, visually limited child. It can be theorized that once the incubated infant is with the mother, vision aids in the development of the primary mother-child relationship. Furthermore, during incubation, the limited vision may aid in the initial environmental orientation.

A child who is both incubated and totally blind is a high risk candidate for becoming emotionally disturbed. Although scrupulous attention is generally given to the amount of oxygen in the incubator, children particularly sensitive to oxygen levels develop retrolental fibroplasia and continue to appear at blind schools. A child who is without vision and the stimulation of perception depends upon sounds and tactile experiences for learning and relating to his environment. The infant in the incubator is rarely in the care of only one person. He is exposed to a variety of sounds and tactile experiences. The only consistent sensory experiences are those of the incubator itself and the gavage tube. Prolonged incubation postpones the time for the development of the mother-infant bond. The totally blind, premature infant who is deprived of consistent auditory and kinesthetic experiences and delayed in establishing a close, dependent relationship upon his mother, is prone to deviant development.

The question of a critical time period of separation from the mother after birth was not explored in this study. It would seem important to know whether there is a relationship between the number of weeks an infant is incubated and the probability of development of emotional symptoms. Such a situation presents an excellent opportunity for primary preventive psychiatric intervention. These children would seem to require contact with the mother as early as possible through talking, touching, and feeding them in the incubator. The education of all children begins in infancy with the mother-teacher. The establishment of a mother-teacher relationship with a premature, totally blind child is a particularly critical factor for future personality development. Therefore, examination of the visual acuity of all premature infants in order to clarify the amount of vision and to lessen the probability of future problems in personality development is indicated by this study. Other studies are in process relating the etiology of blindness, intellectual endowment and scholastic performance, neurological findings, and other handicaps to presence and severity of psychopathology.

Summary

Premature children with sensory deprivation experiences of total blindness, incubation, and social disruption, are high risk candidates for becoming emotionally disturbed. As a single factor, prematurity was found to increase the probability of symptoms of emotional disturbance in all visually limited children. Social deprivation affected only the visually limited children. The combined effects of total blindness (primary sensory deprivation) and prematurity with incubation (secondary sensory deprivation) increased the probability of emotional disturbance more than either of the two conditions alone. Efforts to help the infant establish a relationship with his mother while he is still in the incubator seems imperative.

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RETROSPECTIVE OBSERVATIONS OF THE RETROLENTAL FIBROPLASIA POPULATION AND RELATED AUTISTIC TRENDS IN BEHAVIOR

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Over the years, many children with RLF were observed to display symptoms of early infantile autism, and many were diagnosed as having the disorder itself. The first professional position I held was with such a group of children, and several questions remained with me as I continued to teach visually handicapped children: What relationship, if any, existed between the appearance of the two conditions (RLF and Infantile Autism) concurrently? What etiological factors in the behavioral problem might be traceable to the incubator, hyperoxygenation, or other early factors? To what extent were those RLF children, who were disturbed, truly autistic? How did such a diagnosis influence their development? When an opportunity arose to undertake a research project, I sought to answer these and other questions in a retrospective fashion.

Perhaps the first question to answer concerned the diagnosis of autism itself. Reviewing the literature back to Kanner (1943, 1949, 1954, 1957, 1958), who coined the term, discrepancies in both the symptoms and nature of the disorder are apparent. Kanner views the diagnosis as discrete, dependent upon symptom "count" and severity, whereas others use a less stringent "continuum" approach. Rimland (1964) supports the former view, and recommends a diagnostic instrument which he has devised as a means of separating out true "autistic" children from those with less specific symptom range or intensity. Rimland's checklist was used in the study reported here. Rimland further discusses current views of the etiology of autism, separating them into two general schools, "psychogenic", (parental/environmentally induced), or "biogenic", (arising out of physiological, possibly genetic, differences).

Having visited many families whose children resembled textbook descriptions of autism, it was of interest that parents' handling differed widely. Environmental factors were considerably variant, and it appeared that families responded to the difficult fact of their child (who was developing peculiarly in addition to the blindness), so that life styles were perforce modified. Nonetheless, a variety of variables were necessary to evaluate trends as objectively as possible. The RLF group in New Jersey was retrospectively studied to see which variables differentiated those who demonstrated autistic symptoms from those who did not. In effect, the study viewed RLF subjects as a high risk group for autism. Rimland (1964) mentions the RLF population as such a group.

Two hundred and sixty-three Ss registered with the New Jersey Commission for the Blind met the following criteria for inclusion in the study: Date of birth prior to 1958, residence in New Jersey and diagnosis of RLF with total blindess or sufficient loss of vision to require braille as the reading medium. Data were collected via parent interviews, ratings by professional New Jersey Commission for the Blind workers, and the case history files at that agency.

Four major hypotheses were tested, each suggesting a relationship between the presence of autistic symptoms and variables grouped according to etiological theories, as follows:

I. The literature suggested strong relationships between light birthweight/short gestation time and later clinical signs of neurological impairment (Knoblock, et al., 1956; Weiner, et al., 1965; Cutler, et al., 1965; De Hirsch, Jansky and Langford, 1967, among others). Further, the fact of high oxygen administration offered another variable previously found to relate to concommitant neurological problems (Glavin, 1966; Meyer, 1967). Therefore, the first hypothesis posits a relationship between frequency of autistic symptoms and the physiological (or neurological) variables of low birthweight, short gestation, and high oxygenation.

II. In reviewing the literature, recent investigation was found to link early deprivation of stimuli and/or maternal contact with later symptom development

(Provence & Lipton, 1962; Heider, 1966; Harlow, 1958, among others). Therefore, the second hypothesis posits a relationship between frequency of autistic symptoms and duration of incubation and/or hospitalization.

III. The third grouping under consideration as a correlative variable with symptoms of disturbance concerns other physiological variables related to intervention. In this regard, early medical practice during the period when the etiology of RLF was unknown were reviewed. Two external variables, the administration of ACTH and of blood transfusions were chosen from a multitude of possibilities for their prevalent use. Limited citations (Lanman, 1957; Dunham, 1955) were found in the literature. Hypothesis III, then, posits a relationship between frequency of autistic symptoms and these medical practices.

IV. The literature on autism is widely characterized by discussion of parent-child variables. Kanner, from his earliest writings on the subject (1943, 1949), described parents of such children as cold, detached, intellectual but emotionally unavailable, of high intelligence, "mechanized" in human relationships, etc. He was particularly struck by the high degree of intellectual accomplishment in these families. Ethnic background also played a role in his observations, with a high proportion of Jewish and Anglo-Saxon families seen. Other authors have concurred with these observations (Wolff & Chess, 1965, McDermott, et al., 1967, among others). Therefore, a fourth set of hypotheses concerned the relationship between frequency of autistic symptoms and parental socio-economic status, intellectual level, emotional reactivity and religious/ethnic background.

Data was collected from parents via Rimland's Checklist for Autism, an especially designed instrument. In addition, workers who have known the family completed ratings, and all case histories and records were subjected to ratings. Neurologist's reports, where available, were also rated.

Statistically significant correlations were found in only two categories, the birthweight-gestation findings, and the intellectual level aspect of Hypotheses IV. In the former instance, surprising outcome emerged. The significant correlation for birthweight and gestation was in direction opposite from expectation; in other words, those children who had been *less* premature by either the weight or time definitions were found to demonstrate a greater number of symptoms. The second finding, that of parental intellectual level, followed previous observations in that the higher this level in the parents, the greater the number of symptoms.

Additional outcomes of the study warrant mention. None of the RLF subjects, in retrospect, had severity of symptoms to warrant the clear diagnosis of "autism" by Rimland's definition, although several approach his threshold level. Further, a rather general assignment of the 263 subjects into two groups (Table 1) demonstrates an almost equal dichotomous separation between those who "made it" and those who did not. An incidental finding from the parent interviews suggests that many parents were ill-prepared for evaluating progress by attributing may of the serious symptoms to blindness.

How can such a retrospective study assist our work today? For one thing, the study indicates (Rimland's Checklist is completed as of five years of age) that signs of difficulty were evident early in life. We *knew* that the developmental sequence was different for many of these children. Although environmental changes may not alter the physiological implications, earlier intervention and counseling may have made a difference for some members of the group. Too often, Western man draws an unreal separation between mind and body such that we "write off" situations where physiology imposes severe limitations. In this age of growing multi-handicapped populations, we need to find ways of fostering growth, even in cases of extreme impairment.

The social context was found to have some relevance. Certainly, the existence or absence of meaningful language was found to be a critical indicator for the future. Parental interaction, so often characterized by guilt and despair, may be amenable to change through structured use of early language experiences. We need to reexamine our attitudes toward behavior in terms of interactive cause, be it behavior of parents or of impaired children.

Finally, the striking loss of the more severely impaired subjects in the study is the loss of the ability to derive pleasure and to choose to do so. This philosophical level of studying

Table 1

Distribution of Subjects According to Present Placement (Functional Level)

Functional Level Group	Placement	N	%
A (N=129) 49%	Employed	7	2.7
	Attending College or Graduate School	10	3.9
	Attending Rehabilitation Training Program	4	1.5
	Attending Regular Public, Private or Parochial Day School Program	72	27.4
	Attending Regular Residential School Program for the Blind	36	13.7
B (N=134) 51%	Attending Sheltered Workshop or Special Job Training	7	2.7
	Attending Special Public, Private or Parochial Day Program	21	8.0
	Attending Special Residential School Program for Multiple Handicaps	56	21.2
	At Home	13	4.9
	Placed in State or Private Custodial Institutions	37	14.1
--		(N=263)	100.0%

existence is rarely touched in professional conferences. Through the years, we tended to act upon the RLF group in such a way as to facilitate some of the symptoms we now consider negative. How might we have allowed these children and their parents to act upon the environment in a freer, rather than more constructed ways. Might we examine our teaching and service models to foster emotional availability? Do we value passivity and encourage loss of will? Do we view the severe cases in human terms and see humanity in the emotional fabric of severely impaired children?

Quite practically, it is suggested that energies be expended toward prevention first, but in those cases where prevention is not possible, let us attempt to reach the coming populations with recognition of severe physiological states. Let us attempt to design procedures which will bring more "human" behaviors in gradual increments. Let us offer parents opportunities to learn and grow with us, and be self-critical at every point of decision. We may find a greater record of success than that with those who had retrolental fibroplasia.

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THE SEXUAL & SOCIAL ADJUSTMENT OF VISUALLY HANDICAPPED ADOLESCENTS: A LONGITUDINAL APPROACH

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I. Introduction

Several months ago, a teacher of ceramics approached me concerning the behavior of one of her students. She indicated that one of her male adolescents might behave "improperly" if he were to attend a class trip to a local museum. Specifically, the concern was directed toward the student's desire to explore tactually in great detail the male and female nude statues, particularly the genitalia. The question raised was whether or not to allow the student to attend the trip for fear of embarrassing sighted visitors to the museum. Needless to say, this male adolescent was attempting to satisfy his curiosity concerning body structure in general and the genitalia in particular. Knowledge of this boy's background indicated that his sexual education was severely lacking, that his experience in normal body exploration as a youngster was prohibited and his need so great that information at any cost become the predominant force in his life even at the risk of his being socially disapproved by others.

It is difficult to talk of the sexual and social adjustment of visually handicapped adolescents. To talk only of the adjustment of adolescents implies that the period of time being discussed is an end product. As Davis (1) stated, "A drawback of most research on the 'adjustment' of the blind was that each project based its claim on a sampling of behavior at one period of each subject's life span." Rather, the emphasis should be placed on the developmental process as it unfolds over the years. The total process and all of the contributing forces and factors should be noted and accounted. For example, the attitudes and experiences of the child when he first arrives at school, the school's role as seen historically and philosophically, the degree of visual loss and the age of onset of blindness of the students, staff attitudes and training, all are factors that will determine in part the type of program and its effects on the sexual and social adjustment of the blind youth.

Consequently, this paper will attempt to explore the above factors, consider the developmental process of the body image, discuss the self-concept needs of blind youth and make suggestions for more adequately meeting the sexual-social needs of blind youth.

II. Sexual and Social Needs of the Blind

The sexual and social adjustment of visually-handicapped adolescents, as noted above, should be perceived developmentally and longitudinally. Consequently, this paper will attempt to explore the developmental process of the body image and discuss the self-concept needs of blind youth. The premise is advanced that if the development of the body concept and subsequent self-concept is adequate, the blind adolescent will be sexually and socially well adjusted. However, if the developmental process is adversely affected by inadequate experiences, limited affectual relationships, unsuccessful or limited school programs, the resulting social and sexual behavior of visually handicapped adolescents will be found wanting.

A. Development of the Body-Concept

Numerous authors (Davis 1, Hooft 2, Jervis 3) have published articles concerning the development of the body concept of blind youth. It is not possible to provide a detailed report in the time allowed. However, I would like to talk of various needs that must be met if the body concept is to be adequate and to mention the difficulties that are encountered and must be overcome.

Initially, the infant is completely self-oriented and cannot differentiate himself from his environment. Those people in his life who satisfy his most basic needs are perceived as extensions of himself. Gradually, the process of differentiation, seeing himself as something apart from his environment, occurs. Moreover, he becomes aware that he is a separate physical entity and that he can examine his toes and fingers. Davis (1) states, "By so doing, he begins to develop a mental image of his own body structure."

Obviously, the process just mentioned is more difficult for the blind child. Lacking sight, the child must be encouraged by the mother through talking as well as by action to explore and locate the characteristics of the environment about him to enable the separation of the body from the environment. This process of differentiation and the integration of an adequate body image obviously will proceed more slowly for the blind child.

A second need the blind child possesses subsequent to the differentiation process is to become acquainted with his body structure and to perceive its relationship to the body structures of peers of the same sex. Lacking sight, it is much more difficult for the blind child to learn of his body. Often unintentional obstacles are placed in the way of the blind child in his efforts to receive this information tactually. As Hooft (2) indicates it is not difficult to hide things from blind children and this is done regularly with regard to body exploration. However, in reality, blind children attempting to examine their own bodies and the bodies of their peer mates are merely attempting to compare their physical structures and to learn about themselves through the comparison of their bodies with the bodies of their peers. As these children grow and their bodies change each blind child desires to know whether he is developing in the same manner as other children.

As a consequence of learning at an early age that tactual exploration of their bodies or the bodies of peers is considered by adults to be "wrong," the blind child will engage in such exploration activities in the washroom, the cottage or on the playground. It must be emphasized that these explorations are normal, are a result of a developmental need to learn about body structure, and if thwarted will result in distortion and possible preoccupation with these matters.

B. Development of the Self-Concept

The individual, blind or sighted, does not operate in isolation but is in constant interaction with his environment. The self system acts upon and attempts to control or change the environment (Jervis 3). In return the environment produces feedback which may or may not bring about changes depending upon the need structure of the individual.

Jervis (3) indicates a basic need, with regard to maintenance of the self system, is the need to feel adequate, to feel competent, and to be effective as a human being. However, for some individuals this need is intensified either as a result of compensation or the need to conceal or deny all inadequacy. Obviously, if an individual with intense feelings of inferiority feels inadequate, he will compensate by having an intense drive for superiority.

It is more difficult for a blind person than for a sighted counterpart to master his environment and thus feel adequate and confident. If the environment is perceived as being a possible threat to the maintenance of the self system, interaction with the environment can be avoided or the individual may attempt to block out negative feedback. Obviously, it is quite easy for a blind person to avoid interacting with his environment and, in some cases, it is quite difficult to obtain accurate information from a sighted environment particularly if sighted people tend to protect a blind person rather than to let him develop a realistic attitude regarding himself and the world around him.

A second need that blind or sighted individuals possess in the maintenance of an adequate self system is to avoid anxiety. This is accomplished by finding evidence in the environment to support the individual's assumptions about himself in one of several ways. It may be possible to obtain only positive evidence by the process entitled selective perception. Moreover, negative feedback from the environment can be avoided. Lastly, inadequacies may be rationalized. All too frequently one may hear of the blind child attempting to explain his inadequacies or failure by placing the blame on his "blindness." As Jervis (3) points out, the more a person is made to feel that he must be adequate all the time the greater will be the tendency to develop avoidance techniques.

A third need of blind adolescents according to Sherif (6) is the growth from a dependent state to an independent status. This movement toward independence may be hampered by society in general or by the family specifically if the blind person is viewed as permanently dependent. At the same time the blind adolescent comes in contact with the world of seeing adolescents who move rapidly toward independence particularly with regard to mobility.

As further evidence of the disparity between efforts on the part of the blind adolescent to move toward independence as compared with efforts by significant adults in his life to at times maintain his dependence Davis (1) feels that many blind youth are confronted with "the projected image concept." This concept is the continual emphasis on the need to present a positive picture to the seeing world. Any effort by the blind adolescent to adhere to his sighted peers' likes and dislikes with regard to clothing or hair style often is chastised. The validity of such chastisement is not being questioned at this point. However, the fact remains that the blind adolescent's efforts to conform to peer pressures coupled with reduced acceptable avenues of social behavior leads to frustration and as a consequence the blind adolescent may become either overly assertive and aggressive or assume a dependent status.

III. Recommendations

Although programs aimed at the development of sexual and social adjustment have been increasing in number across the country for blind youth, it is my opinion that the existing programs are not adequate for all blind children. For those individuals with a severe experiential lack in the early formative years, the distortion of the body image and resulting inadequate self-concept becomes progressively worse regardless of the typical program concerned with sexual and social adjustment. Hooft (2) mentions that it is so easy to keep the child away from all sexual knowledge and experience. For this reason sexual development threatens "to grow crooked." Moreover, it is interesting to note that many parents and educators desire to "let sleeping dogs lie" by not allowing blind children to explore their bodies or to discuss this need for fear that the blind child will become preoccupied with such matters to the detriment of his school work. I suggest that as a result they accomplish that which they fear the most. It is for the above reasons that the following recommendations are made.

A. Improvement of Body Image

It is recommended that the learning about body structure and the function of all body organs take place at an early age, preferably in consultation with the parents and long before the children have sexual feelings themselves. It must be remembered that when the blind child becomes conscious of sexual life, he will receive experiences, perhaps even seeking them out, and that this is a normal stage of development. As Hooft (2) states, the question is not whether it should be tolerated since in any case it will happen.

It is well recognized that verbal teaching of body function and organs of the body is not sufficient. Indeed, the complaints of many blind youth are directed toward those programs that contain only a verbal approach. Many writers and many schools have attempted to make use of models of either specific organs or the overall body structure. A caution, however, should be noted. Models often create more distortion rather than eliminating confusion. A two dimensional representation of the body is highly inadequate and creates the greatest distortion of body composition and function. Moreover, many models are made of materials such as hard plastic which further create distortions. In addition, many models of body organs are not presented in a manner which enables the blind student to perceive the relationship of the organ to the rest of the body.

Recommended techniques and methods employed in sensory awareness presentations are useful and should be utilized by educators of the blind in their efforts to improve the body image of their students. Manaster and Adams (4) utilized sensory awareness techniques with groups of blind adolescents at the Illinois Visually Handicapped Institute in 1968. Perkins School for the Blind has attempted during the past two years to replicate their findings. It became quite evident that many of these children, although possessing high verbal abilities, were lacking in experiential concepts and physical knowledge of their own bodies. It was further recognized that many of these children fell further and further behind their sighted contemporaries as they grew older.

At both the Illinois Institute and Perkins School for the Blind five consecutive sessions, one session per week, were held. Basic concepts and ideas were first presented and as the sessions progressed they were made more complex and more directly applicable to the daily activities engaged in by the children. Attendance was voluntary and members of the staff who participated in the project were oriented by the use of discussions and actual practice in the activities to be presented.

The rationale for the use of sensory awareness technique was the realization that the typical approach employed by most schools for the blind was to provide mobility courses, aids to daily living, physical education courses and crafts. These efforts were either in conjunction with cottage life, as a special course of instruction, or summer institute. However, it was recognized that many of these children cannot make use of or did not seem to progress as a result of these experiences. Their experiential deficit was so great at the most elementary level of body awareness that the program of sensory awareness was felt useful and therefore implemented. However, it was not felt that such techniques should be a replacement of the above courses of instruction but could be used as a supplement.

The emphasis in all sessions was to enable the children to learn by doing and as a result of verbally describing their actions. Staff members participated and helped to either mold the children in the various activities or presented themselves as models for the children to examine. After each session, the children "flopped" to enable them to discuss what had transpired. Examples of the sensory awareness techniques employed were the "walk around," the "make believe you are in a box," the "how do we look when we are happy or sad," the "fall back," the "tug of war," the "be something," the "pound," and the "sculpture." The last two sessions were devoted to combining some of the earlier activities and presenting them in connection with normal daily activities. Moreover, the emphasis was directed toward the use of the total body in whatever activity was being engaged. A specific description of each of the above activities may be found in the works of Schutz (5).

The staff at Perkins School for the Blind felt that the sensory awareness techniques were extremely useful and had a high interest value for the children. Although this technique will be employed in the future, it was felt that many of the activities and techniques could be directly utilized within the school curriculum, particularly at the early grade levels. Consequently, a motor program was specifically devised and incorporated within the kindergarten program. This program was designed to relate motor activities to the musical activities and games which children learn in their recreational music classes. Every week two classes were devoted to music and movement activities in the music room and three classes were held in the gymnasium where an emphasis was placed on activities in coordination, laterality, body concept and basic motor skills. The purpose of coordinating the two programs was to relate a feeling for rhythm to motor activities in order to make them as efficient as possible. Basic areas covered included crawling, walking, stop and start, jumping and hopping, and the touching of various parts of the body; i.e., the nose, ear, hand, foot, waist, etc. In each area, the rhythm of the movement was stressed. Moreover, an emphasis was placed upon relaxation and the release of tension through large muscle movements in order to facilitate particular motor patterns.

B. Improvement of Self-Concept

It has been interesting to notice at Perkins School for the Blind the large increase in social activities provided for the children on weekends. It has been encouraging to notice the desire for sighted groups to return for repeated functions. Moreover, the number of outside of school contacts has increased. It is also significant to point out the increased use of mixed sighted groups that interact with a complementary mixed group of blind children.

It is my opinion that the success of the program is not directly related to the increased number of social activities provided. Rather it is the quality of the activity, the development of the interpersonal relationships between the youngsters that has led to the program's success.

At times there appeared to be a spontaneous fusing of the two groups and yet at other times there appeared to be a "distance" between the groups. It is our feeling that the quality of the communication between children or the lack of it determined success or failure. Moreover, I feel an additional important factor in determing success was the preparation prior and efforts during an activity to allow for free communication between the groups. Both seeing youngsters and those that are visually handicapped need to be able to express their perceptions of each other before joining together in an activity and to be able to express their concerns directly to each other. It is therefore suggested that the techniques employed in "group encounters" be considered and adapted prior to, during, and following the interaction of seeing and visually handicapped youngsters.

Lastly, it is suggested that more attention be paid to the varying degree of vision possessed by visually handicapped youngsters and their resulting self-perception of themselves as it relates to the development and improvement of social programs.

It is felt that by being aware that the sexual and social adjustment of the blind is a continuing developmental process, and by using the above described techniques, approaches, and suggestions, fewer visually handicapped children will possess distorted body concepts and self-perceptions.

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USE OF EYES IN PARTIALLY SIGHTED CHILDREN

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The purpose of this paper is to present useful information concerning the vision of the partially sighted child. I define partially seeing as vision ranging from 2/200 to 20/60.

I classify partially seeing as:

Group I	Light perception to 1/200
Group II	2/200 to 4/200
Group III	5/200 to 20/300
Group IV	20/250 to 20/60

The purpose of this classification is to establish an arbitrary standard for the greatest use of residual vision. Children in Group I should be taught braille whenever possible: those in Group II should be encouraged to read some size of type. These are the borderline patients and it is often difficult to decide what to advise for specific individuals in this classification.

Children in Group III and IV should be taught to use their eyes. Group III children need assistance such as special classes, large type, recordings, tapes and individual instruction as well as optical aids. Children in Group IV can usually compete in school as well as in various occupations successfully with persons who have normal vision. Quite often, members of this group do not require optical aids or possibly need only conventional spectacles.

The incidence of the partially sighted is approximately 2,500,000, of which nearly 150,000 are under 21 years of age.

Causes and Incidence of Impaired Vision

1.	Hereditary defects	70%
2.	Retrolental fibroplasia	13%
3.	Infections	6%
4.	Injuries	4%
5.	Tumors	4%
6.	Miscellaneous	3%

Standard Snellen vision charts commonly employed are suitable for testing vision of 20/100 or better. For testing vision less than 20/100 size letters ranging up to 20/800 are needed or present test charts should be used at closer distances. It is more practical to use standard Snellen charts at closer distances. I routinely hold the test chart at 5 feet from the patient. I test at 5 feet because most partially sighted patients can read down to where there are at least 3 to 5 letters on a line which is a more accurate test than using just one letter. Furthermore, it is simple to transpose the vision tested at 5 feet to the standard testing distance of 20 feet by multiplying both the numerator and denominator of the Snellen fraction by 4. For example: when a patient reads the 20/50 line at a distance of 5 feet, the vision is recorded as 5/50. This is transposed to the standard testing distance of 20 feet by multiplying both the numerator and denominator by 4 making the standard Snellen vision fraction of 20/200. (5/50 x 4/4 = 20/200).

There are only three test charts known to me with test letters ranging between 20/200 to 20/100 and these are infrequently used. *This means that a patient for all practical purposes is legally blind whose vision is less than* 20/100. Vision tested on charts with test letters between 20/200 and 20/100, as well as testing vision at closer distances will take more than 10 percent of legally blind out of the legally blind classification because their vision will be recorded better than 20/200. This is a situation where accurate vision testing and recording is causing confusion which needs interpretation and explanation by responsible administrators.

Near vision testing is more important than the distant test because more learning is done at close range. Not only is the size letter essential to know but the distance at which it is read. The advantage of reading a book at 16 inches over a reading distance of 1 inch is tremendous.

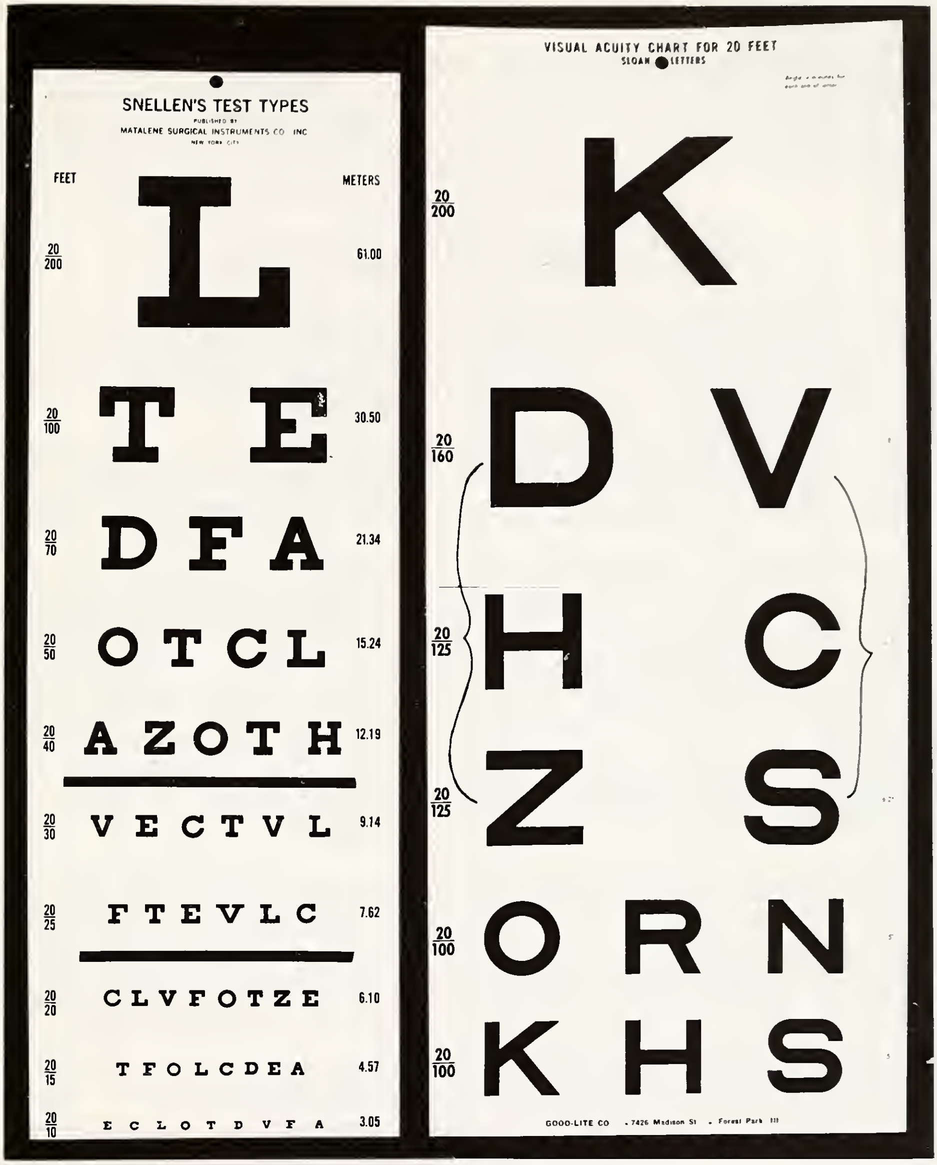

Fig. 1

Snellen charts on left is the type commonly used (no letters between 20/200 and 20/100).

Snellen charts on right shows acuity designations of 20/160 and 20/125 (more than 10 percent of legally blind have vision ranging between 20/200 and 20/100).

The units of measurement for near are the Jaeger numbers, the Snellen designations and the point size. Since these methods are all used without being correlated with each other and samples of size type commonly used, this comparison is given in the following table.

Comparative Near Vision Notations

Jaeger 1	Snellen 0.5	4 point	Small Bible type
Jaeger 2	Snellen 0.6	5 point	Want ads (newspaper)
Jaeger 3	Snellen 0.7	6 point	Telephone directory
Jaeger 4	Snellen 0.8	8 point	Newspaper text
Jaeger 6	Snellen 1 M.	9 point	Magazines
Jaeger 9	Snellen 1.5 M.	12 point	Typewriter type (pica)
Jaeger 13	Snellen 2.0 M.	18 point	Children's books (7-8 years)

I advise the teacher, counsellor or psychologist to test the vision himself on the size type used in school, paying attention not only to the size type but also to the distance at which it is being read. Partially seeing children must hold the paper close to their eyes to see because this is the most common method of producing magnification. The poorer the vision, the closer the book must be held. Holding reading matter close to the eyes does no harm to the eyes. It does have an adverse effect on the posture, therefore reading stands are beneficial.

Children are most favorable for low vision correction because they have never experienced normal vision and adjustment to everything is easier at an early age. *Approximately 70 percent of children with subnormal vision under 10 years of age either need no optical aid or only a distance correction for their refractive error.*

Eye Diseases Favorable for Low Vision Correction:

1. Achromatopsia (complete color blindness)

2. Albinism

3. Aniridia (absence of iris)

4. Cataracts (when surgery is not recommended or accepted)

5. Coloboma of retina, choroid and optic nerve

6. Keratoconus (irregular scarred cornea)

7. Macular aplasia

8. Heredo-degeneration of macula

9. Pathologic (progressive) myopia

10. Surgical aphakia for congenital cataracts

11. Retrolental fibroplasia

Eye Diseases Less Favorable for Low Vision Correction:

1. Choroideremia (absence of choroid with constricted field of vision)

2. Advanced diabetic retinopathy

3. Visual field defects e.g. due to brain tumor

4. Glaucoma (advanced)

5. Optic atrophy associated with severely constricted field of vision

6. Retinitis pigmentosa when central vision is poor

Most of these unfavorable eye diseases are characterized by a severe progressive constriction of the visual field.

One should not despair even with the most unfavorable eye disease because it is amazing what an intelligent, well-adjusted and strongly motivated person can do. I would not believe this had I not examined so many of these cases.

Methods of Correcting Subnormal Vision for Distance:

1. Careful refraction

2. Nonoptical method

3. Contact lenses for keratoconus

4. Telescopic spectacles

I have been able to make a significant improvement in distant vision of approximately 20 percent of patients by a careful refraction because many children are very myopic (near-sighted) or hyperopic (far-sighted) and many have a high astigmatism which is usually associated with the myopia or hyperopia.

The nonoptical method is the most natural, simple, flexible and inexpensive method of producing magnification. This is the method unwittingly used by all people when they move closer to the object of concern.

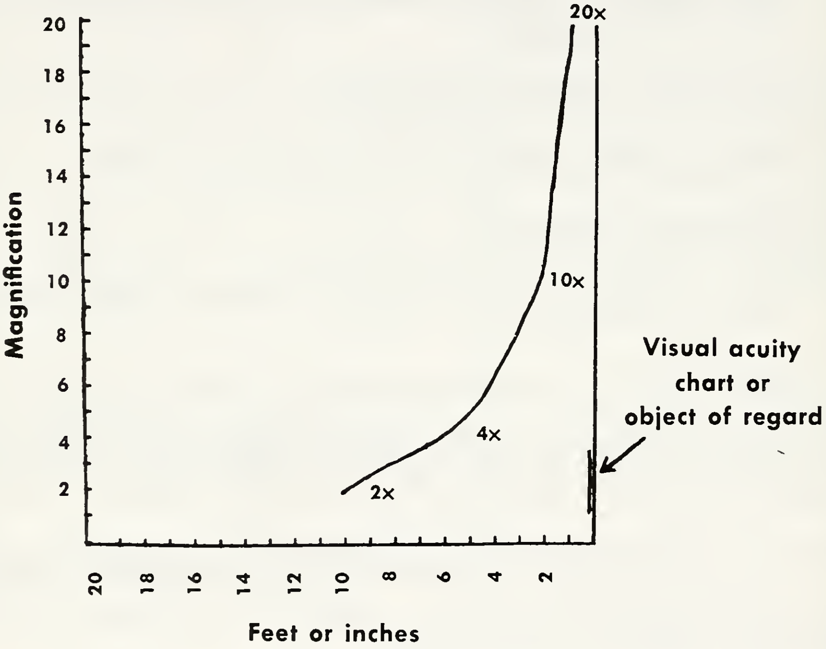

Fig. 2. Nonoptical Magnification

Magnification of 2X is produced by advancing from 20 feet to 10 feet from the object of regard; a magnification of 10X is achieved by advancing from 20 feet to 2 feet from the object of regard. The nonoptical method has great application in the classroom. Sitting in the front row instead of the back row produces a magnification of 4X and moving the chair up to the blackboard produces a magnification of 10X. Sitting close to television also produces the same flexible magnitude of magnification. There is no known evidence that sitting close to color television has been harmful. Subnormal vision justifies the risk benefit ratio for sitting as close as one foot from the television set.

A contact lens is the only optical aid which rehabilitates a partially sighted person almost completely so that he can see clearly at a distance of 20 feet, 18 inches and 12 inches. A contact lens is indicated for keratoconus (irregular and often scarred cornea) and seldom for any other eye disease.

Telescopic spectacles produce a magnification of about 2X and constrict the visual field to less than 14 degrees; consequently, they make the patient legally blind if he is not already blind.

Legal blindness is defined as vision of 20/200 or less in the better eye with the best correction, or a visual field constricted to 20 degrees or less in the greatest diameter even when the central vision is 20/20.

Telescopic spectacles are dangerous to wear for distance because of the severe constriction of the visual field as well as the fact that objects appear large and close. They also magnify motion when the head is turned. Why wear a correction for both eyes when only 20 percent of children with low vision use both eyes together? The need for magnification for distance is infrequent and intermittant and is best corrected with a monocular telescopic spectacle which can be held before one eye or clipped on to the spectacle frame.

Methods of Correcting Impaired Vision for Near Vision:

1. Careful refraction
2. Nonoptical method
3. Strong plus lenses
4. Contact lenses
5. Telescopic units

Most children with low vision request aids for near. This is fortunate because more improvement can be made for near than for distance.

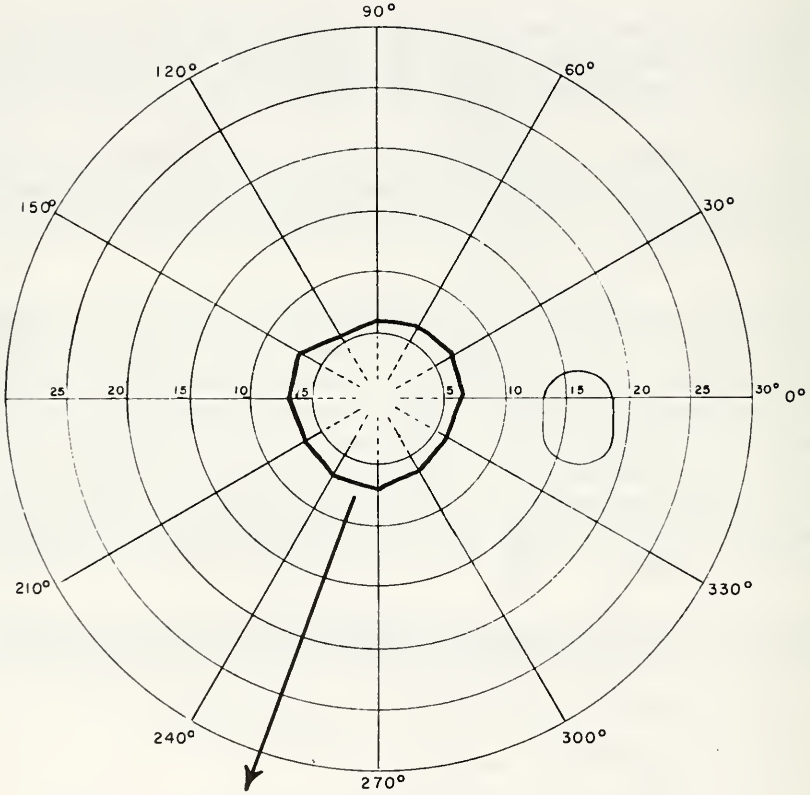

Fig. 3. Visual Field of 2.2X Telescopic Spectacles

Every patient with low vision should have a careful refraction because many have high myopia, hyperopia or astigmatism for which a spectacle correction rehabilitates the patient to a large extent.

The nonoptical method has even greater application for near than for distance. Type brought from 20 inches to 5 inches from the eye produces a magnification of 4X. Type brought from 20 inches to 1 inch from eye produces a magnification of 20X.

Strong plus lenses are indicated when the child cannot hold the book close enough to produce adequate magnification. This occurs early in the far-sighted (hyperopic) patient and later when there is no refractive error when there is a need to read fractions and small type.

In about 90 percent of all cases where contact lenses should be prescribed they are indicated for keratoconus. Occasionally contact lenses are indicated for corneal scars and healed keratitis.

A telescopic unit consists of a reading cap placed over the telescopic spectacle which enables the patient to read. A telescopic unit is indicated in preference to equivalent magnification in a strong plus lens when an increased reading distance is imperative. I have never observed this indication in anybody less than age 21.

The greater the strength of the optical aid the greater is its limitation. They do not improve vision to 20/50 so that the patient can pass a driver's test. It is dangerous to drive a car with telescopic spectacles because the visual field is constricted to less than 14 degrees, the object of regard appears larger and closer, and motion is magnified. The greatest disadvantage is that vision cannot be improved for intermediate distances ranging from 4 to 18 inches. This means that the partially sighted are usually excluded from reading music while playing an instrument, performing the functions of a laboratory chemist, accountant, stenographer, bookkeeper and a machinist.

Large type was introduced 60 years ago in London because it was believed that reading at distances close to the eyes was harmful. Now, ophthalmologists agree that this is not a harmful practice; consequently, the reason large type was promoted is no longer valid.

Large type is usually 18 point type, the size routinely used in first and second grade. The size of standard text is generally 12 point type. The 18 point type is 1.7X larger than 12 point type. The same magnification is gained by reading 12 point type at 4.8 inches as reading 18 point type at 8 inches from the eyes.

TABLE 1

Relation of Vision and Distance to Reading 8 and 12 Point Type

Vision	Distance at which 8 point type (newspaper) text is read (inches)
20/50	14.0
20/100	7.0
20/200	3.5
20/400	1.75

Vision	Distance at which 12 point type (typewriter) is read (inches)
20/80	14.0
20/160	7.0
20/320	3.5
20/640	1.75

A person needs only 20/50 vision to read the newspaper and 20/80 vision to read 12 point type at a reading distance of 14 inches. By reducing the distance by one-half, that is to 7 inches, he can read newspaper text when his vision is 20/100 and typewriter type when his vision is 20/160.

By reducing the reading distance by one-quarter, that is, to 3.5 inches, a person whose vision is 20/200 can read the newspaper, and one whose vision is 20/320 can read typewriter type at 3.5 inches.

The facts given in Table 1 raise the question why large type is recommended for a child whose vision is 20/200 or better. If a patient's vision is 20/320, he would probably prefer to read standard 12 point type at a reading distance of 3.5 inches rather than large 18 point type at 6 inches.

The same magnification of 1.7X is achieved with standard 12 point type at 2 inches as with 18 point type at 3.5 inches.

Disadvantages of the Use of Large Type:

1. It is rarely available in high school and college texts and not available in books at the graduate level.
2. It is not available for all subject matter and in all editions of same book.
3. The patient's disability is emphasized.
4. Books printed in large type are more expensive than those in standard type.
5. Large size and heaviness of books are objectionable to children.
6. It is difficult to find employment where large type is used.

Indications for Large Type:

1. When distant vision ranges from 2/200 to 10/200 (decisions are often difficult for upper and lower limits.)
2. When the patient cannot read 12 point type (pica typewriter) at 2 inches from the eye.
3. When a greater reading distance is mandatory, for example, for mathematics and accounting.
4. When a patient insists that large type is more comfortable and easier on his eyes (this statement may be valid, but the advantage is offset by the need for a larger book).

COGNITIVE PATTERNS IN SUBJECTS BLINDED BY RETINOBLASTOMA*

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Observations have been made over the years that survivors of retinoblastoma demonstrate higher intellectual capabilities than the general population or the population of blind individuals. These observations have been supported by some research (Williams, 1968; Thurrell & Josephson, 1966), and further reported informally (Taylor, 1965; Davis, 1965). Retinoblastoma (cancer of the retina with early onset for which enucleation and/or radiation therapy are performed) is of known genetic etiology (Reese, 1954; Ellsworth, 1969), thought to be a specific gene defect (Kitchen, 1970). Evaluation of the cognitive superiority of this Population, and its components, may, it is hoped, shed light upon the genetic contributions to intellectual development.

Prior study of the cognitive pattern in congenitally blind subjects revealed that this group was more global in perception (that is, dependent upon contextual clues and less articulated on tactile disembedding tasks) than the sighted controls (Witkin, et al., 1968). The measures which were employed to tap these variables in these groups and those with retinoblastoma are as follows:

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*The research project herein reported was conducted by the author in collaboration with Herman A. Witken, Philip K. Oltman, and Florence Friedman and supported by a Grant (M-628) from the United States Public Health Service, National Institutes of Health. The complete report will appear in: J. Hellmuth (Ed.), *Cognitive Studies, Volume Two: Deficits in Cognition,* New York: Brunner, Mazel, 1971.

1. The Tactile Embedded Figures Test: This test of analytical ability in perception is the tactile analogue of the visual Embedded Figures Test, prepared in thermoform. There are 15 pairs of figures, each containing a simple and complex pattern, and the subject is asked to find the simple figure in the complex one (see plate 1).

2. The Auditory Embedded Figures Test: An auditory version of the above, prepared on tape with simple and complex note patterns (tunes) played on an organ.

3. Tactile Block Design Test: This test of analytical ability in problem solving is a haptic version of the Wechsler block design subtest, prepared in screen and oaktag. The subject is asked to reproduce patterns within a time limit (see Plate 2).

4. The Tactile Matchsticks Test: A further test of analytical problem solving, the subject is herein asked to remove small rods from a lattice arrangement so as to reduce the number of squares in the pattern. The subject, in the ten such problems, must overcome the organization to discover the solutions (see Plate 3).

5. The Haptic Forms Test: In order to control for differences in form perception which may have influenced results on the above measures, this measure of form without disembedding was administered. The subject is given a plexiglass shape, then it is mixed up with three other shapes and he is asked to find the original from the group (see Plate 4).

6. Wechsler Test, Verbal Scale: Either the WISC or WAIS verbal subtests were administered, depending upon the age of the subject.

7. Clay Models of the Human Form: This adaptation of the Draw-a-Person test was administered by asking the subject to make a model of the human figure (whole person) out of a 3/4 pound ball of clay. The results were rated for articulation of form.

The theoretical framework for analysis findings on this battery is drawn from previous research which indicates self-consistent modes of functioning throughout perceptual and intellectual activities (Witkin, et al., 1954, Witkin, et al., 1962). Three cognitive dimensions have been examined in interrelation. One is the global-articulated dimension, the cognitive style, which has been of particular concern in the previous studies; another is the verbal-comprehension dimension; the third is the attention-concentration factor.

The results of findings with this battery in the congenital group (Witkin, et al., 1968), suggested greater articulation in the sighted on the measures of articulation and problem solving with the exception of the Auditory Embedded Figures Test. This latter measure related more highly to the attention-concentration subtests on the Wechsler. The blind group was superior to the sighted in auditory attention. No significant differences were found in the verbal-comprehension dimension.

In contrast, the retinoblastoma subjects demonstrated more articulated functioning than the sighted group on all subtests, although the findings were not always significant (see Table 1). The verbal-comprehension factor revealed only insignificant differences in the three groups. In the attention-concentration findings, both blind groups were superior to the sighted and similar to each other.

Question arose in analyzing the findings as to whether the Haptic Forms Test contained some disembedding qualities, thereby contaminating the results where form perception was held constant. The scores were therefore adjusted for proficiency on this task, and the results are reported in Table 2.

The results for the samples studied are in keeping with the prevailing impression that totally blind retinoblastoma cases include among them many who function at a high level of cognitive ability. At the same time the results argue against an "overall-superiority" hypothesis, but point instead to superiority in particular cognitive areas. The cognitive pattern that seems typical of at least many totally blind retinoblastoma cases may be characterized as follows: With level of haptic-forms performance controlled, they are clearly superior to the congenitally totally blind on the global-articulated dimension. They are at least the equals of the sighted on this dimension--and on one of the tests used to

Table 1

Means for Retinoblastoma, Congenitally Blind and Sighted Groups

Cognitive Dimension	Test Measure	Retinoblastoma[a]	Congenitally Blind[b]	Sighted[c]
Verbal-comprehension	Verbal-comprehension factor IQ's	118.9	115.9	114.9
Attention-concentration	Auditory embedded figures	82.5	84.5	68.1
	Attention-concentration factor IQ's	122.3	112.5	118.8
Global-articulated Perceptual disembedding	Tactile embedded figures	44.1	136.8	61.7
	Tactile matchsticks	7.2	4.7	5.3
	Tactile block design	18.3	11.7	13.2
Body Concept	Clay models	5.2	3.7	4.9

[a] N for Retinoblastoma group = 28, except for factor IQ's and clay models, where N = 26. $\bar{X}$ age = 16-0.

[b] N for Congenital group = 26, except for verbal-comprehension factor IQ, where N = 21; attention-concentration factor IQ, where N = 18; tactile block design, where N = 25; and clay models, where N = 23. $\bar{X}$ age = 15-10.

[c] N for Sighted group = 34, except for factor IQ's, where N = 33, and clay models, where N = 32. $\bar{X}$ age = 15-6.

The Tactile Embedded Test is scored in mean time, so that the lower the score the more articulated the performance. All other articulated measures are scored in the opposite direction; the higher the score the better the performance.

Table 2

Means for Retinoblastoma, Congenital and Sighted Groups, Adjusted for Haptic-Forms Proficiency

Tests	Retinoblastoma	Congenital[a]	Sighted[b]
Tactile embedded figures	59.7	130.5**	53.7
Tactile matchsticks	6.5	5.0	5.7
Tactile block design	16.7	12.3**	14.1*
Clay models	4.8	3.4**	5.1

[a] Probability values refer to Retinoblastoma vs. Congenital comparison.

[b] Probability values refer to Retinoblastoma vs. Sighted comparison.

*$p < .05$.

**$p < .01$.

assess this dimension they are superior to the sighted. Further, the retinoblastoma cases share with the congenitally totally blind a marked superiority, compared to the sighted, on tasks calling for sustained auditory attention. In verbal-comprehension ability, the third cognitive dimension assessed, the retinoblastoma group is superior to both the sighted and congenitally blind in tactile form discrimination.

The next phase of the study will evaluate subjects with unilateral retinoblastoma, to determine the effect of vision and to assess genetic similarities as reflected by cognitive functioning. A new form discrimination task is being designed to control better for this variable in analysis of the results on the articulation measures. The Auditory Embedded Figures Test is being reviewed to see whether a clear test of articulation may be devised for this sensory channel. Further study of clay models as a measurement device is also planned.

Differences in cognitive style among known groups with specific genetic characteristics suggests hereditary aspects of specific intellectual abilities. The retinoblastoma survivors have provided an opportunity to evaluate such differences, and clinical observations have been supported in one cognitive dimension.

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Plate 1

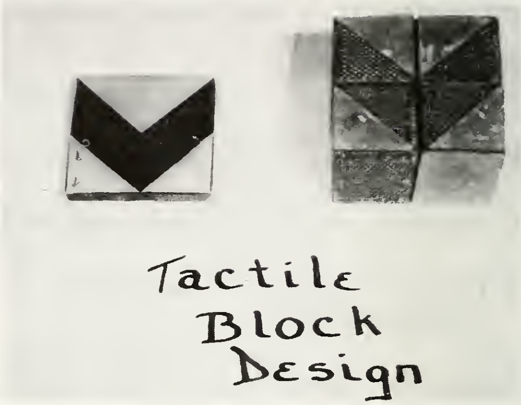

Plate 2

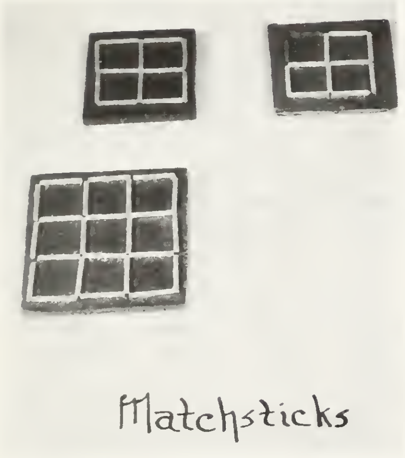

Plate 3

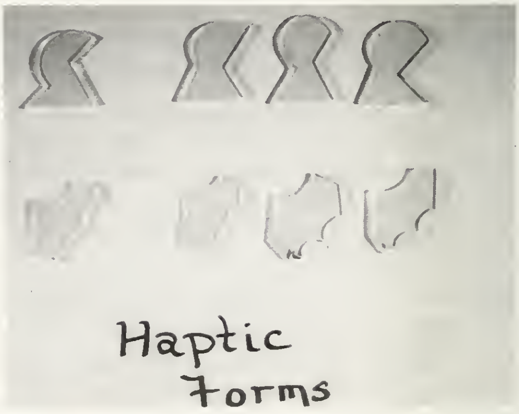

Plate 4

CURRENT APPLIED RESEARCH

SCIENCE CURRICULUM IMPROVEMENT STUDY KITS ADAPTED FOR THE VISUALLY HANDICAPPED

Ross L. Huckins, Teacher

California School for the Blind
Berkeley, California

About 10 years ago the National Science Foundation gave generous support to the Lawrence Hall of Science at the University of California for the development of ungraded sequential physical and life science programs for the elementary school - programs which in essence turn the classroom into a laboratory. The aim is to develop in children the ability to weigh and sift evidence, remain open-minded, listen to ideas of others and then make decisions on the merit of evidence. In the Science Curriculum Improvement Study Kits, the center of attention in the classroom is not the teacher, but the materials with which each child is involved in discovery and manipulation.

The modern understanding of science rejects the idea that the scientist functions only as a camera. Instead it recognizes that what a scientist, or anyone for that matter, observes, depends as much on his past experiences and on the conceptual structure of his mind as it does on what is "out there" and what is in the mind of the observer. A quarter of a million children are using these kits.

About 2 years ago, Dr. Everett Wilcox, Supt. of the Calif. School for the Blind, contacted the Lawrence Hall of Science and Dr. Dan Johnson, Director of Special Education of Alameda County and together they obtained a Title 3 Grant of $100,000 for the period of 1969-1972, to adapt the SCIS kits so that they can be used by visually handicapped children in any public or residential school, whether there is one blind child in the class, or all of the class is blind. This is sort of a "piggy-back" project, taking advantage of all of the experience and research that went into these kits. Many of these kits need very little adaptation for the blind.

These kits are developed because the ordinary public school classroom child is talked to and experimented for, resulting in entirely too much verbalism and too little experience. The SCIS approach is just what we need for visually handicapped and multihandicapped children. One of the added values of these kits is that the gifted blind child and the educationally retarded blind child can each progress at his own speed. Incidentally, if you happen to be in Junior High or Highschool work, these are ungraded kits, don't hesitate to use them.

The greatest adaptation needs to come in the teacher rather than the materials. The teacher must allow and encourage the blind child to experience and discover science principles for himself. One of the hardest things for a teacher of these materials is to keep from giving answers and doing for the children instead of allowing them to argue with each other and struggle to manipulate materials themselves. The teacher does not contradict a student, but asks other students if they agree and why.

You buy a kit with equipment for 32 children and order one or more packets of adaptions for the blind. We hope these all will be available on quota from the American Printing House. Each kit has a teacher's manual to help the teacher understand how to proceed. The adaptions in procedure that we feel are helpful to the teacher who has one or more blind children are written on translucent paper and inserted in the teacher's manual, to give the teacher confidence by knowing how other blind children have successfully used the materials.

This year we are working on four of these units. Three men from the S.C.I.S. study and myself are each using one of these kits with blind children and making adaptions we feel necessary. Then the rest of us give constructive criticism and then we use the kits with other groups of children. We have agreed to attack a problem with, "At this minute I don't understand how a blind child can do this," rather than saying "Blind children cannot do this." For example, the blind children had much trouble catching and tactually understanding guppies. Goldfish were substituted. The bottom of one square plastic fish bowl was punched (a hot nail pushed through in several places) and placed inside another like container, then filled with water, fish, etc. By slowly lifting the inner perforated container, setting it on an angle inside the other, the fish is in a small amount of water where he can be easily caught and tactually examined. Examining a large fish purchased from the market is also helpful. After familiarity with the goldfish, the children could then work with the guppies with understanding.

One of the units is called Relativity, not Einstein's relativity, but how the positions of objects are related to each other, using one or more reference points. The student manual has many pictures, making it seem too visual. We are successfully adapting some of these using "pop-ups" similar to those in greeting cards, valentines and children's books. Other puzzles and games are being thermoformed. One of the key figures in this unit is "Mr. O" an artificial observer. He is a large cardboard figure with buttons on his front and his right arm marked with sandpaper. "Mr. O" enables the children to start thinking of the relationship of materials to each other outside themselves; to look at things from the viewpoint of another. We begin with six simple directions: right-left, up-down, front-back; and close-far relative to each of these.

Because the child learns to accept responsibility for understanding and describing meaningfully the relative positions of things, this has excellent carry-over to mobility and orientation, geography maps, setting up arithmetic problems, crafts, working in a kitchen, etc. Just as these experiences are valuable for sighted children, they are invaluable skills for the blind child. When the teacher learns to answer questions with questions, instead of dishing out facts, the growth and self-confidence in the student is tremendous. The function of the teacher is to observe and listen to children and notice how they are progressing in their investigations and be a guide who leads children to see the relationship of findings to key concepts of science. Teachers are recognizing that experiments and investigations create interest, skills and concepts far beyond those achieved by the use of texts.

Some of our adaptions may seem to be unconventional. The test is what really works with visually handicapped and multiply handicapped children. When we give children an honest chance, and encouragement, they will discover the facts we are so anxious for them to learn, plus an appreciation of themselves and the opinions of others. Perhaps our children of today can learn better ways to cope with our world.

For free information about these Science Curriculum Improvement Study Kits and their proposed adaptions, request Newsletter and other information from:

Dr. Herbert Thier
S.C.I.S.
Lawrence Hall of Science
University of California
Berkeley, Calif. 94720

TECHNOLOGICAL ADVANCES IN SENSORY AIDS FOR THE BLIND AT MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Vito A. Proscia, Director

Sensory Aids Evaluation and Development Center

The Massachusetts Institute of Technology Center for Sensory Aids Evaluation and Development was established under the direction of the late John K. Dupress on September 1, 1964 under a contract from the Department of Health, Education and Welfare, Vocational Rehabilitation Administration. The Director and Center staff are directly responsible to the Department of Mechanical Engineering at M.I.T. The small staff of the Center is supported by a highly qualified group of specialists; however, the chief support and guidance comes from Professor Robert W. Mann of the Department of Mechanical Engineering, who is Chairman of the Steering Committee and who plays a significant and energetic role in the Center's activities.

The purpose of the Center is to provide a technological and scientific facility which is responsible for the development, evaluation, and demonstration of sensory aid devices, and which directs itself to the solution of problems in sensory deprivation for the blind, multiply handicapped blind, and visually impaired in order to help this population of sensory handicapped to become independent, productive, and socially accepted members of the community. The Center realizes that the solution of these problems cannot be found solely in technology; therefore, a considerable effort is made to engage and cooperate with agencies and organizations concerned with rehabilitation, education, and services for the blind.

The scope and activities of the Center cover:

1. development, demonstration, and evaluation of sensory aid devices;
2. evaluation of new and innovative aids;

3. encouraging others to develop new aids;
4. production engineering of sensory aid devices;
5. in-house development of aids and devices for demonstration and field testing in cooperation with agencies;
6. development of evaluation procedures;
7. presentation and seminars in technological advances in sensory aids for the blind to universities and colleges, schools of special education, agencies for the blind, interest groups, etc.; and
8. cooperative programs with school systems, agencies, industry, and consultants.

The goals of the Center require the innovative capabilities of various professional disciplines. These goals are often sparked by the creativity of student thesis activity. Many of the ideas and devices brought to the Center have originated under the direction of M.I.T. professors and student involvement and participation. It was through the initial participatory theses programs that the professors at M.I.T. realized the need for a "Sensory Aids Center," since the work conducted by the students could be carried on by professional personnel and appropriate resources. From this parochial beginning, the Center has grown and developed into a facility which is providing beneficial implements and products for the blind of our nation and abroad.

The main thrust of the Center is to advance the field of communications for blind, deaf-blind, and low vision persons and to enhance mobility and orientation techniques through the use of state-of-the-art technology and evaluative field tests. Much effort and attention has been given to braille computerized programs and braille output devices in order to make braille copiously available to the blind as a useful communication medium. The projects concerned with braille have emphasized M.I.T.'s basic philosophy of "making braille as accessible as print."

The MIT High-Speed Braille Embosser, known as "BRAILLEMBOSS," which originated as a student thesis project, has been redesigned and is presently being made available in limited quantities for distribution to select users. This project was sponsored by a grant from the Hartford Foundation and has been successfully completed as of June 30, 1970. The BRAILLEMBOSS terminal has already been recognized as a useful, remote, interactive braille output device. Three (3) braille terminals are actively exercised in as many computer environments in the Boston area. The first has been on-line with two (2) separate time-sharing computer systems at MIT's Computation Center, the 7094-CTSS system and the IBM 360/67 computers. The second has been extensively utilized since October 1969 as a demonstration project by a blind mathematician employed at NASA's Electronics Research Center in Cambridge, Massachusetts. The third BRAILLEMBOSS was installed at the Perkins School for the Blind in Watertown, Massachusetts in February 1970 and is presently being demonstrated as a braille output teaching aid for high school students engaged in learning programming on the G.E. time-shared computer network. The installation of these devices has been straightforward and easily accomplished. Inkprint is immediately converted into braille via a combination of a BRAILLEMBOSS slaved to a standard TELETYPEWRITER which in turn is connected to the appropriate computer system by telephone lines. This means that an interactive braille system can be readily installed in any desired or needed location by use of the above equipment for purposes of education and employment.

Another successful demonstration program, conducted under the direction of the Center, took place in Fall 1968. This project resulted in the production of a braille novel, The East Indiaman, by Ellis K. Meacham, simultaneously with the new inkprint issue. This investigation determined the utility of compositors tapes, which are used to print inkprint material, as the input media to a braille translation program. The project was held in cooperation with the Library of Congress, the American Printing House for the Blind, Poole Clarinda of Chicago (printer), Little Brown & Company (publisher), IBM, the Social and Rehabilitation Services (HEW), and coordinated and managed by the Center.

Several forms of computerized Grade II braille translation programs exist in various states of completion and format. The two sophisticated programs currently being utilized are housed at MIT's Computation Center and the American Printing House for the Blind in Louisville, Kentucky. DOTSYS, located at MIT, functions as an experimental time-sharing program, whereas the braille translation program housed in a dedicated computer at APH is a batch processing production system and has produced many hundreds of books for general consumption. Both DOTSYS and the APH Grade II translation system are unique to their particular computer environment and would require considerable effort and expense to transfer to other computer systems. With this notion in mind and in keeping with our basic philosophy of making braille more accessible, the Center contracted with the MITRE Corporation of

Bedford, Massachusetts to investigate and develop a computerized Grade II braille translation program which would be transferrable to major computer systems. The MITRE Corporation developed DOTSYS II in a higher level language, "COBAL," which is considered to be transferrable to most of the major computer systems containing COBAL capability.

A further extension of this program has resulted in an agreement with the Atlanta Public School System for the delivery of DOTSYS II which is to be incorporated in the IBM 360/50 computer. This system will be utilized to produce braille educational material by batch processing methods. Plans are currently underway to expand the DOTSYS II braille translater to include an interactive braille system in order to utilize the MIT-BRAILLEMBOSS. Upon completion of this program, DOTSYS II will be made available to users who have a need and requirement to generate literary braille.

The scope of the Center's activities is broad and the problems we attempt to solve are difficult. An example of this is the work the Center is pursuing in overcoming an important communication problem involving the deaf-blind. The Industrial Home for the Blind in Brooklyn, New York brought to our attention the need for a fire alarm and doorbell communication device to be used in selected or confined areas by the deaf-blind. The previous devices developed for this specific task proved to be unsatisfactory. The Center took it upon itself to devise and develop a communication system which would be suitable for the requirements set forth by the IHB.

It was required that a vibro-tactile, portable device, which would be carried on the person, be designed and implemented. A battery operated receiver with a vibro-tactile display was designed and built. The communication link utilized induction transmission principles. A transmitter (or sender) was connected to wire loops which determined the coverage zone. The signals emitted from the loops energized the receiver, which was neatly tucked in the individual's pocket. This system was demonstrated to the IHB and was accepted as a possible solution to the fire alarm and doorbell requirement. In cooperation with IHB, National Center for Deaf-Blind Youths and Adults, this system will be evaluated in the forthcoming months.

It is envisioned that the pocket communication system, now known as "TAC-COM," has many uses for the deaf-blind. Projected investigations for the use of TAC-COM are:

1. end of line indicator for braillewriter and typewriter;
2. telephone indicator;
3. auditory cue indicator;
4. ambient or artificial light indicator, etc.

The art of advancing the mobility of the blind through use of devices has not progressed rapidly. The age-old cane and the assistance of a guide dog are still the two basic modes of travel aids. Since blind people are interested in becoming more mobile and less conspicuous in their travels, several projects have been underway at the Center to meet these goals.

A significant achievement of the Center has been realized by the recent manufacture of a highly reliable folding cane. HYCOR, Incorporated of Woburn, Massachusetts is manufacturing and offering for sale a replica of the MIT-design folding cane. The manufacture of the cane evolved from a student thesis project, further developed at the Center, evaluated and field tested through the crook-handle folding cane, and eventually arriving at the straight-handle folding cane. The manufacture was made possible through a subsidy of the non-recurring tooling costs by the Northwest Foundation for the Blind.

The cane as a travel aid is an adequate device for mobility of the blind. However, if cane travel techniques were supplemented by an electronic device, that is, a device that is inconspicuous and which will protect the blind traveller from objects which cannot be detected by the cane, it would then give the traveller a greater sense of security and a larger margin of safety. The PATHSOUNDER is an exploratory electronic device being extensively evaluated at the Center to investigate these concepts. The PATHSOUNDER is an ultrasonic radiating device which rests on the chest of the user by a strap suspended from the neck. The radiated ultra-sound beam which lies directly in front of the traveller, detects objects between the waistline and the forehead. The device warns the user of objects in his path and protects him from severe collisions. Several agencies are presently cooperating with the Center in field test evaluation programs. PATHSOUNDERS have been distributed and are being tested by the New York Association for the Blind, the Greater Pittsburgh Guild for the Blind, the Veterans Administration, and independent travellers.

The most current participatory program is a committment and exploration of closed circuit television as a low vision aid. This program is being conducted in cooperation with the Massachusetts Commission for the Blind through Mr. Philip J. Davis as Chief Investigator of the project, the Boston University Low Vision Clinic, and MIT students. Five (5) "VIDEO-VISION" systems will be delivered to the B. U. Low Vision Clinic by early Fall to be evaluated by patients under the direction of ophthalmologists. It should be understood from the outset that the VIDEO-VISION system is considered to be a supplement to other low vision aids. The clinic requires the patient to test, utilize, and familiarize himself with the approved low vision aids before introducing the television system. In addition, the participants in this program believe that the analysis, evaluation, and prescribed television devices be controlled by the staff of the Low Vision Clinics. The goals of this program are to develop a production engineering model to be used as a reading aid which is economically reasonable, costing less than $1,500.

The essential element of recent successes of the Sensory Aids Evaluation and Development Center is cooperative effort. It is through cooperation, communication and education that the fulfillment of our goals can be realized together.

TECHNICAL RESEARCH AND DEVELOPMENT AT THE AMERICAN PRINTING HOUSE

Virgil E. Zickel

American Printing House, Inc.
Louisville, Kentucky

I believe it appropriate to begin this report on technical research and development at APH with a review of the print-to-Braille translation project using a computer.

From the beginning of this project some 15 years ago it was felt that the use of the computer for translation would have several advantages. For example, it should shorten the time required to convert the inkprint copy into Braille plates, it would lessen the need for a vast number of skilled Braillists with their many years of training and it was also hoped that the cost of Braille produced in this manner would be appreciably less than that produced in the conventional way.

In 1965 an IBM 709 computer was installed and some Braille plates were produced that first year. Since then the volume has increased steadily and a report for the calendar year, 1969, indicates that a little less than 50,000 plates were translated and embossed during that period.

While we have known for several years that late model computers capable of translating Braille more efficiently were available, we appreciated having the 709, knowing that it was installed as an experiment to enable us to learn if a computer could actually perform the translation of print to Braille. However, it is a pleasure to inform you that we now have an IBM 7040 replacing the 709. While the installation of this machine has been underway for several months and in partial operation for approximately a month, using some of the 709 off-line equipment, the entire 7040 system is now operational. There is very little difference in the speed of the two systems; however the 7040 through its solid state circuitry is far more dependable and less sensitive to temperature changes. Actually, the fragility of the 709 was the prime reason so few magazines were scheduled for translation by the computer. Down time was such a large factor that we found it hard to maintain the tight schedule magazines require. It is a little early to make sound predictions but it appears that maintenance may now be less than 25% of that with the older machine. With the 7040 we expect to translate a total of 75,000 plates during the calendar year, 1970.

I am sure that most of you are familiar with the book, *East India Man* which was translated using the inkprint publisher's compositors paper tape as input. This experiment was sponsored by the Library of Congress and done in cooperation with M.I.T. While it proved that compositors tape can be programmed to supply the input to the computer, it also pointed out some of the many problems that would have to be resolved to make this a practical procedure. To list a few: typesetting procedures vary from one company to another with some actual variations in the codes, the normal time lag between type setting and the selection of a book for Brailling would make it necessary that all tapes to be collected and cataloged for possible future use but probably most important is that many typesetters make corrections in the metal and not the tape therefore making these corrections necessary manually at the time of translation.

In our search for other means of input, we are encouraged with the prospect of optical scanning. We have been in contact with two companies who are interested in supplying us magnetic tape obtained from the printed book by optical scanning and one has made a firm quotation from which it appears that optical scanning might eliminate a vast amount of keypunching. While it is a little early to make a definite statement, the prospect is most encouraging.

In cooperation with Shack Associates, we learned of another development which may have a profound effect on the translation of Braille music. It has been learned that the music publishers have developed a code for use with perforated tape or cards to control music transcribing equipment. Since one of the major problems in translating Braille music is coding the printed sheet, the use of these tapes would eliminate this problem. The actual translation into Braille is still a problem; however, this appears to be straight forward, requiring only time and money. Since Braille music transcribers are becoming fewer and fewer and the demand for music is increasing, we plan to pursue this idea further; hopefully it will provide the means for meeting the great need for Braille music.

The Printing House now has the Science Measurement Kit ready for distribution. While this is not actually a technical development I hope that it will be of interest to you . This kit includes a number of items available from commercial sources that have been adapted for use in teaching science to blind students. Included is a spring or dial balance, a pan balance and a thermometer. Also included is a new one-foot ruler made of molded black styrene, graduated from left to right on the upper edge in centimeters and on the lower edge in inches so that the conversion from metric to English scales is readily accomplished. The ruler is 1/4" thick in the center tapering down to approximately 1/16" on the edges and for all practical purposes it is unbreakable and very accurate.

The spring balance is graduated tactually in grams with some key points in ounces. The pan balance is a standard model, quite rugged and supplied with the necessary metric weights. The thermometer is a commercial instrument adapted for reading tactually, with raised lines in 10°F. intervals, and the freezing point and the boiling point marked with large Braille dots. Various other pieces of equipment are provided including overflow and catch cans, and an electrical heating unit along with the appropriate blocks for indicating weights and volume.

For approximately a year, APH has manufactured a solid state variable speed control for use with tape or record play back equipment. This device has been very popular. Actually over 1,000 units have been produced, and both the Sony 105 and the APH reproducer can be supplied with this control.

The new APH talking book reproducer has been available for several months and it has also been very well received. This machine has an unusually light pickup arm with a stylus pressure of only 3 grams that completely protects the record from accidental damage by the needle. The amplifier is of the latest solid state design with an output power of 2 watts.

Research and development has been under way for some time on the model of a special phonograph reproducer utilizing the stereophonic pickup with a special tone arm and turntable which allows the user to play a record at 8-1/3 r.p.m. or to scan at 66-2/3 r.p.m. It is unusual in that it can move forward, stop or move backward at either speed without damage to the needle or tone arm. Also a photo electric cell located in the tone arm detects bands on the record and audibly indicates where they occur.

Our tests have indicated that the design is sound and four more of these machines are now in production. I am sure you are wondering what we plan to do with this unusual gadget.

Actually for some time APH has been interested in the use of recorded text material for handicapped children. As long ago as 1963 we published a number of recorded texts including the Adventure Series; Adventures of the American People; Adventures for Readers, and several others. This, however, did not prove to be very popular.

In searching for a reason for this lack of popularity we are reminded that a child studying a conventional text may stop at a place of special interest, or a passage that is difficult and reread a part of the material. He may also refer to the index, read a footnote or refer to another page in another chapter.

All of these can be accomplished through the use of the special reproducer referred to. For example, the chapter heading and page numbers could be carried on the record track or side of the stereo groove permitting rapid access, using the high speed scan. When the desired page is located the machine is returned to the reading side of the groove and played at the slower speed.

Some sample material has been recorded and tested along with a Braille supplement.

When the additional machines are completed formal testing of the material will begin.

The idea has so many possibilities that development of the material will be a major project. However, the new machine, plus the special material suggests an exciting future for the use of recorded text.

PRE-SCHOOL VISION & HEARING SCREENING & NURSERY SCHOOL PROGRAMS FOR VISUALLY HANDICAPPED CHILDREN

J. Kirk Walter
Project Director & Coordinator of Visually Handicapped

Northwestern Illinois Association
For Hearing, Vision, and Physically Handicapped Children
DeKalb, Illinois

The Illinois State Legislature has charged the local school districts with the responsibility of educating visually handicapped children beginning at age 3. This legislation became effective July 1, 1969. To date only one class devoted entirely to preschool visually handicapped children has been established. This class is housed at the Winnebago Center for the Blind in Rockford, Illinois. The class is paid for by Rockford School District #205 and supervised by the Northwestern Illinois Association Coordinator of Visually Handicapped. How these children were identified and the class developed is a long but exciting story.

In 1968, the State of Illinois was awarded a Title VI-A Grant to be utilized in the area of identification, diagnosis, and evaluation of preschool children, ages 3-5, who may have a hearing, vision, or orthopedic impairment.

In turn, these grants were awarded to various projects within the State of Illinois on a competitive basis. It became obvious that this money could be more effectively spent by developing regional programs, using a minimum school population base of 200,000 as a criteria for a region.

Illinois now has sixteen regions ranging in size from less than a county to as many as eighteen counties. Illinois is more heavily populated in the north than in the south and thus there are more regions in the north.

In some regions the Title VI Project is an entity unto itself, while in others it is a part of a more complex joint agreement. This is the case with the Northwestern Illinois Association for Hearing, Vision, and Physically Handicapped Children.

The Northwestern Illinois Association was originally a Title VI program functioning strictly at the preschool level. Superintendents and Special Education Directors soon realized the value of the identification procedures in future planning of classrooms and staff. As a result of an assessment to each school district, the Northwestern Illinois Association was able to hire educational consultants in the areas of hearing and vision and will soon have a consultant in the area of orthopedic-health impaired. These educators act as coordinators and consultants to each of the school districts.

The Illinois Department of Public Health also acknowledges the value of regional planning and assists various regions in their preschool screening. This assistance is in the form of training technicians and providing financial assistance. The screening technique, criteria, and instruments are all approved by the Joint Committee on Optometry and Ophthalmology, the Illinois Department of Public Health, the Illinois Society for Prevention of Blindness, and the Office of the Superintendent of Public Instruction.

As a result of these additional funds and cooperation by 104 school districts, the Northwestern Illinois Association is able to provide coordinating services to children ages 3-21 in a nine county area. Involvement with the school districts means that each certified employee is eligible for special education reimbursement from the State Department of Special Education. Thus the Northwestern Illinois Association is a multiply funded association dependent on federal, state, and local funds for its continued growth and development.

The preschool screening and development of educational programs follows a systematic but yet very flexible pattern in an attempt to meet the individual needs of each community. The Project Director and the Supervising Technician plan the areas in which screening will take place. Once the Regional (County) and District Superintendent of Schools have been notified, a local volunteer agency, such as church groups or women's clubs, is contacted and asked to cooperate in the screening program. The

Supervising Technician then meets with the volunteer group to discuss the screening process and the vital role played by the volunteers. The success of the screening program depends largely on the ability of the volunteer group to "round up" large numbers of children.

Two different vision screening instruments are available. Our technicians prefer the Michigan Jr. Screener, especially with very young children and Head Start groups. Technicians in some programs prefer the Titmus Vision Screener. Both are approved for the screening.

The hearing technicians follow the procedures recommended by the United States Public Health Service and screen at the following frequencies: 500, 1000, 2000, and 4000 Hz at a hearing level of 25 dB (ISO).

A child is considered to have "failed" the screening if he:

a. fails to hear any two tones at 25 dB in the same ear.
b. fails to hear any one tone at 35 dB in either ear.

The volunteer group is responsible for spreading the word so that every child may be screened. The Northwestern Illinois Association assists in this publicity by providing each volunteer group with samples of publicity and especially prepared pamphlets. In the larger cities the children are pre-registered a week in advance so that they will not all arrive at the same time on screening day.

On the screening day the volunteers are ready to do their part and the certified screening technicians set up their instruments prior to the arrival of the children. The children either pass or fail the screening and no attempt is made to determine visual acuity or hearing level. If the child fails the screening, he is then asked to return in two weeks for a rescreening.

In the event that the child fails the rescreening, the parents are then asked to contact an eye doctor so that their child may receive a full ocular examination.

Usually a visual loss can be corrected. There are times, however, when the child's vision loss is great and little, if any, correction can be made. Now is the time when the parent and the child need all the help and understanding that they can get.

The eye doctor explains to the parents the various agencies and organizations that can assist the family.

Although there are friendly people waiting, the family's first visit to an agency may be full of fear and apprehension.

The executive director of the agency and the Northwestern Illinois Association Regional Coordinator of Visually Handicapped explain to the parents the concept of regional planning and how it brings together the resources of many areas to meet the individual needs of the child.

The parents and child are then introduced to the Nursery School teacher and a few of the many trained volunteers. A volunteer introduces the child to some of the other children while the parents and teacher discuss the progress the child has made thus far, including toilet training, eating habits and skills, likes and dislikes, as well as fears and abilities.

The teacher then describes a typical day at the school. When the children arrive they are encouraged to learn to descend the stairs first with assistance and then independently. Each activity at the school is designed for two purposes, for fun and to develop greater independence. Parents are encouraged to continue the activities and increase independence learned at the school.

For many visually handicapped children the main ingredient that is missing is fun. An obstacle course is fun for the child but serious business as far as the school is concerned. In addition to the basic skills of climbing, crawling, jumping, sliding, and balancing, the child learns basic terms and concepts such as up, down, in, out, push, and pull. Tieing a shoe or putting on a coat and similar activities can also be part of the obstacle course.

It is extremely beneficial for the students to be exposed to orientation and mobility skills at an early age. Finding Potato Man is not only a game for the children but an excellent means of developing sound localization. Potato Man makes a loud ticking noise and is hidden by the teacher, a volunteer, or a child. When Potato Man starts ticking, the teacher calls out a child's name and the child attempts to locate Potato Man before the ticking stops. At a later date the sound localization skills developed through the use of Potato Man and other games will become an important part of the student's travel both indoors and outside.

Each morning roll is called. This is done not only for attendance purposes but so that the volunteers will have a chance further to identify children by name. Roll call also helps to bring order to the day.

While most of the school program is devoted to learning through having fun, there is always time for a serious moment. A United States flag consisting of different textures for each color or shape is shown to the children. While some are able to see the flag with their eyes, others must use their fingers which will act as their looking glass to the world for the rest of their lives. Now is the time to begin training to develop greater tactile discrimination.

Each morning the children salute the flag and say the Pledge of Allegiance. It may not mean much at first but gradually through meaningful discussions by the teacher, volunteers, and parents, these and other activities will become more meaningful.

Singing is a fun activity too. But once again there is a reason other than fun for this activity. Rhythm and balanced body movements are ultimate goals. The abstract lyrics of some songs help to expand the thinking and reasoning of some of the students. Other songs tell of our country's history, climate, or geographical locations.

Volunteers are used extensively in the program so that the teacher may spend her time in observing the children's progress and making appropriate suggestions.

A child who is blind enjoys a good story as much as any one, especially if the time and effort is made to be sure that the child understands the story. This may be done by explanation or through tactual exploration of an object similar to the one described in the story.

The children enjoy painting and soon learn that it is another form of self-expression. The children who have some vision enjoy painting with a brush as well as finger painting. All of the children find finger painting delightful and look forward to it.

The children are kept busy either individually or in groups. Marching to an activity record helps to develop the concepts of jumping, running, skipping, walking, and hopping.

Every effort is made to insure that the children do not overtire. Unfortunately many visually impaired children are not used to normal activity and they tire very easily. At mid-morning a rest break is called and each child spreads his mat on the floor.

During this ten to fifteen minute rest period, one volunteer remains with the children while the teacher and the other volunteers go to another room to discuss the day's activities thus far and any problems which may have arisen. As a result of such discussions, adjustments can be made in the day's program.

The children's health and safety is always of first importance. Each volunteer is instructed in proper fire drill procedure. This procedure as well as the building has been approved by the fire marshal's office.

The teacher is the last person to leave after she has looked in all side rooms and under tables. Some of the children either cannot or have not learned to walk as yet. These children are carried out by the volunteers. Once outside the building caution is observed since police and fire equipment will be arriving.

Each year the children visit the fire department or at least see a fire truck. In addition, firemen explain the importance of fire drills.

A respect for fire, not a fear, is instilled in the children. A calm, relaxed atmosphere is maintained throughout the fire drill so as not to upset the children. Once the fire drill is over the children return to their classroom.

Water is an interesting phenomenon for blind children. For some, perhaps due to an unfortunate incident, water is something which is feared. Other children find water a delightful experience. In an attempt to overcome a child's fear of water, play activities are developed to meet the child's individual needs.

A small plastic swimming pool is used somewhat in reverse. The child remains outside the pool while his toys and water remain inside the pool. As the child develops confidence he is introduced to running water in a sink and flushing the toilet. Pouring water into a cup or pail may be fun for the child but his experiences in the pool will soon be transferred to his table skills and pouring milk or juice.

Juice and cookies are always an event to look forward to. It is not unusual for a child entering the program to be unable to feed himself. The teacher and volunteers teach the children to feed themselves and to drink from a cup or glass if they cannot already do so. Here again parents are encouraged to continue at home activities developed at school.

With the coming of warmer days the classroom moves outdoors. The swimming pool takes on a new dimension. By the time fall comes around these children will be used to water and will be ready for the large swimming pool at the local YMCA or YWCA. This gradual introduction to water activities will have resulted in a child that is ready to learn to swim.

Other outdoor activities include walks in the park, playing on the swing set, and field trips. In the spring the children plant seeds and watch them grow. The fresh air and sunshine also contribute to the child's health and development.

The teacher, director, volunteers, and Northwestern Illinois Association Coordinator of Visually Handicapped hold periodic conferences and staffings. During these conferences major changes in program are discussed. When a child has demonstrated that he is capable of functioning in an integrated situation, he then enrolls in a regular nursery school or kindergarten program. The Coordinator of Visually Handicapped makes advance preparations for the child by discussing the proposed change with the parents and the new teacher. Depending on the child's needs, the coordinator will recommend either gradual or total integration or else he may recommend visits by an itinerant teacher.

During all of this time the State Consultant for Visually Handicapped is kept informed of the child's progress and needs. She in turn may make recommendations to the Coordinator of Visually Handicapped who will attempt to implement these recommendations locally.

The Northwestern Illinois Association is less than two years old and yet its impact in the state's second largest city, Rockford, as well as in Pearl City whose population is less than 500, has been felt. This fall the Northwestern Illinois Association will open its first audiometric facility for hearing evaluations beyond the screening program. Plans to secure a psychologist skilled in testing children with hearing and vision impairments are being made. The staff has grown from one member in the fall of 1968 to thirteen members by the fall of 1970.

Regional programming has a great deal of merit and is worthy of consideration by any state. I thank you for your time and patience in learning of this program and hope that you will attempt to utilize not only the concept of early education for children who are visually handicapped, but also the importance of early identification of children who have a vision or hearing loss so that perhaps they will never need the services of the special education teacher.

READING READINESS MATERIALS

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These materials will be discussed in terms of their value as aids in preparing visually handicapped children for the task of reading braille. Some of the aids were not developed specifically as reading materials, but, rather as general readiness aids. Therefore, they are suitable for use in several different academic areas. This paper will be restricted to a discussion of the use of these aids in reading.

The first two items, the Simplified Block and the Peg Frames, were developed as a result of urgent requests by teachers for readiness materials which were very basic and elementary, and aids which could be used by children who were functioning at levels so low that the readiness materials now available were not suitable for their needs. These needs became known as the result of a study which is being conducted by Mrs. Fay Leach of the American Printing House for the Blind. The study is entitled "Survey of the Educational Needs of Multi-Handicapped Visually Impaired Children". Some of the results indicate that it is imperative that these children be provided with concrete experiences and materials which are especially designed for their needs. This is true, of course, for all visually handicapped children, but it is particularly relevant to the education of multi-handicapped children. The study mentioned above also indicates that educational materials used with these children should emphasize a multi-sensory approach. That is, materials should be designed so that more than one sense is involved in their use. They should also be multi-purpose materials and be capable of being adapted in a number of ways. Further, they should be highly motivating, incorporate the learning of basic skills, and should focus on the development of communication and language. Obviously, all of these attributes are desirable, and necessary, in educational programs for pre-school visually handicapped children. This is the reason for including the two aids mentioned above in this demonstration. It should be stressed that these are prototypes and are not completed models. They have not been fully evaluated in terms of their effectiveness as readiness materials for visually handicapped children.

SIMPLIFIED BLOCK

This large block is designed with different colors and textures on each side, and with a frame into which it can be fitted easily. The frame is designed so that a very young child, or a child with multiple handicaps can fit the block into it with very little difficulty. Accompanying the block and the frame are squares of materials of different colors and textures which can be matched with the sides of the blocks. The block and frame can be used alone, or several sets can be used together to form patterns which the child can duplicate or develop from memory. The frame is backed with a material which causes it to adhere to any surface. Therefore, the child is able to work with the block and frame without the problem of having the frame slip out of reach.

Some of the purposes for which the Simplified Block can be used are as follows:

1. It can first be used as a toy, to be played with and manipulated in the same way any child would play with a block.

2. Development of gross motor dexterity

    a. The block has sufficient weight and is of appropriate size to be used in developing grasping ability.

    b. The different sides of the block can be examined for identification of textural differences. An activity such as this will help to develop the ability to discriminate tactually and can also create an awareness of the differences in different types of materials.

   c. The turning of the block for correct position in the frame strengthens the hand muscles and promotes manual dexterity.

3. Sensory Development

   a. Visual - The three colors of the sides of the blocks can be matched in various ways by children with enough vision for this purpose. This activity will aid in the development of color identification and discrimination.

   b. Tactual - The various textures of the sides of the blocks can also be matched as a means of developing the ability to discriminate tactually and to identify different kinds of textures.

4. Cognitive Development

   a. The concepts of "same and different", or "like and unlike" can be developed in activities involving the different colors and textures of the sides of the blocks.

   b. Memory sequencing can be developed by having the child reproduce or recall the sequence of colors or textures from patterns set up by the teacher. Some children may be able to create patterns of their own.

   c. Number concepts can be taught when the child is ready for this type learning experience.

The Simplified Block can be used as a "reading readiness" aid in conjunction with other similar aids. As has been suggested, possibilities exist for its use as a readiness aid in the areas of mathematics, graph reading, or in any instance where the ability to read raised line illustrations is required.

PEG FRAMES

The Peg Frames consist of three frames of varying sizes which have holes of varying sizes. The first frame has one large hole, the next has two smaller holes, and the third has three holes which are even smaller. The pegs which accompany the frames are varying sizes also, in order to fit the different-sized holes. These pegs have enlarged tops so that they can be grasped more easily by children who might have difficulty with muscular control. Each of the frames is backed with material which causes it to adhere to any surface. Therefore, the frames stay in place while the child manipulates the pegs.

Some of the purposes for which the Peg Frames can be used are as follows:

1. At first, they can be used as toys which will aid the child in learning to manipulate objects and, also, make him aware of differences in sizes and shapes of objects.

2. The child will begin by using the large frame and will gradually learn to use the smaller frames. These frames will give him practice in putting objects in and taking them out of holes. This activity will develop manual dexterity and, also, grasping ability.

3. The inside of the holes in the frames is painted in a contrasting color to the rest of the frame. Therefore, for children with some useful vision, the peg frames can be used in developing color discrimination.

4. When the child is ready, the beginning concepts of counting can be taught with the peg frames.

The next two items, the Textured Blocks and the Peg Wagon, were developed in conjunction with a study which was conducted by Miss Carol Halliday and which resulted in the publication of the booklet entitled *The Visually Impaired Child: Growth, Learning, Development-Infancy to School Age*. Again, it must be emphasized that these materials were not developed specifically as "reading readiness" aids. However, they are extremely suitable as aids in the development of the various skills which will be needed by a visually handicapped child as he learns to read. This child may become a reader of braille, which means that he will be required to use his fingers and, thus, his ability to discriminate tactually can best be developed by practice. This entails first, doing things with the whole body, then with the arms and hands and large muscles, and later doing finer things which strengthen the fingers and make them more flexible and sensitive. The child with enough vision to use large print will need some of the same kinds of activities in order to develop the skills necessary to learn to read. He will need to develop the ability to discriminate visually and to identify likeness and difference in various types of materials. He will also need to develop physical coordination and a satisfactory degree of eye-hand coordination.

The Textured Blocks and the Peg Wagon are suitable for children who are functioning at a higher level than those using the Simplified Block and the Peg Frames. They might, in fact, be used as the second step in the development of braille reading readiness; with the Simplified Block and the Peg Frames being the first step. The materials were not designed with this sequence in mind, necessarlly, but a resourceful and creative teacher could certainly develop a reading readiness program beginning with the sequential use of these aids.

TEXTURED BLOCKS

The purpose of the Textured Blocks is to develop tactual awareness, to develop the ability to discriminate, and to give the child opportunities to perform various cognitive tasks. Some suggestions for using the blocks to develop these abilities are as follows:

1. At first, use the blocks simply as blocks to be played with. They can be given to the child in a small box and he can be encouraged to rattle them, take them out, lay them on the floor or table, put them back into the box, or hand them to someone. He can also carry them in various types of containers and the sound differences can be pointed out to him.

2. The different colors of the sides of the blocks should be called to the attention of children who have any useful vision. One or two colors should be pointed out at a time, since the identification of several different colors at one time would be confusing.

3. The concepts of size and shapes can be introduced to the child, gradually. He can be taught to find the small blocks, large blocks, etc. The shapes of the blocks, "cubes or squares", can also be pointed out to him and compared with other objects in his environment.

4. Qualities of the various textural surfaces should be discussed in terms of "rough", "smooth, "rougher than", "soft", etc.

5. Matching, in terms of texture and color, can follow these activities. Eventually, the child can learn to copy patterns made by another person, and some children may learn to make patterns of their own.

6. Tangible counting can be begun at whatever point the child shows interest and is ready to learn this concept.

PEG WAGON

The Peg Wagon Provides the child with slightly more refined tasks of taking out and putting in, grasping, etc., than the Peg Frames. It can actually serve as an extension of the Peg Frames, since both aids are based on the simple pegboard idea.

Some suggested activities to be used with the Peg Wagon are as follows:

1. At first, especially with very young children, it can be used simply as a toy, without the wooden slides and pegs. It can be pulled or pushed with the handle off or on. The very young child will probably want contact with the whole wagon at first and, therefore, the handles should be off. The wagon can be filled and/or emptied as an additional activity.

2. Both sizes of pegs can be used separately from the peg-inserts. They can be rolled in the tray; put in and out of containers; discussed in terms of color, size, and shapes; and eventually counted.

3. The three-holed insert should be placed in the wagon first, with the pegs already in the holes. The child will usually learn to remove the pegs first, and will later learn to replace them. He can eventually learn to count the pegs as he removes and replaces them.

4. Next, the child can be introduced to the six-holed insert. Obviously, this task is more difficult than using the three-holed insert, since the holes are

smaller and more pegs are involved. In the beginning, the child will find the removing of the pegs from the holes easier and of more interest. Later, with practice, he will be able to replace them.

5. For most children, the six-peg insert will be the first introduction to a group of six. Much later, the braille reading child will learn that the braille cell can contain as many as six dots. With this board it will also be possible to develop the child's understanding of rows, both down and across, which is necessary in learning braille.

6. The Peg Wagon can also be used in developing the concept of counting. For example, from all nine pegs the child can select the six pegs which fit one board and the three pegs which fit the other board.

7. In all activities involving the use of these materials, the child should be encouraged to make any visual observations possible.

Interspersed with all the activities suggested for use with these four aids, the child should have time for free play with the materials. He should be encouraged to play with others, using the materials. The teacher should be creative in her use of the materials and should encourage the child to be creative also.

The use of the aids is not necessarily limited to the child who will be reading braille. It should be stressed that the child who seems to have any useful vision, at all, should be shown how to use it and should be encouraged to do so. Any indication of visual interest and awareness on the child's part should be developed.

These materials can also help the child expand his vocabulary as he uses them in the various activities suggested above. The teacher should talk to him in simple, meaningful, broadening terms and encourage him to use these terms independently. Through the use of meaningful vocabulary, the child will learn to think and do.

The final set of materials we would like to discuss is the *Braille Reading Readiness Manual - To Be Used for the*

Development of Dot Perception, which was developed by Dorothy and Forrest Goodenough of the Texas School for the Blind, Austin, Texas. This manual consists of (1) four volumes of braille exercises for students, (2) instructions to the student to accompany each braille exercise, (3) explanations to teachers and/or parents who will be using the materials, and (4) lists of labels to be used as aids in dot discrimination.

The manual was designed to meet the needs for readiness materials for students who are preparing to learn braille. The entire manual consists of four books which can be used so that the preschool child can be introduced to dot perception in Book I as early as three or four years of age and progress to the other books as fast as his ability will allow.

Since one of the difficulties in braille reading is the problem of following a line of dots from left to right across the page, rows of flocking (or raised thermoform patterns) are used above and below the dots to help the student develop the ability of following a line of dots, as in reading braille.

In Book I, only one dot to a cell is used at all times. The student is not introduced to the term "cell" in reference to braille in this volume. The use of only one cell allows for greater ease in recognizing the grouping and the relative positions of the dots. The plan used in Book I is based on two developmental stages:

1. Exercises which deal only with the horizontal spacing of the dots, with recognition of the open spaces and the varied groupings of dots.

2. Exercises to develop recognition of the vertical position of the dots in the cell. Dot numbers are not introduced to the student at this time, but the position of the dot is identified as high, middle or low.

In Book II, only two dots are used in a cell. Tactile discrimination is developed by introducing the more complex characters very gradually. The student is asked to discriminate in two basic ways:

1. To determine the relative position of dots within the cell; whether they are arranged vertically, diagonally,

or horizontally. To do this, the student indicates whether the dots are straight up and down, top first, top last, or side by side.

2. The student indicates the proximity of the dots by saying whether they are *close* together *or apart*.

Since dot discrimination is easier when the dots are not too close together, the sequence is planned to introduce dots which are not in closest proximity first.

In Book III, the child learns the *numbers* of the dots and their position in the cell. (This is explained to the teacher in Book II). For the first time, three and four dot combinations are introduced, in addition to the combinations introduced in Book II. The more easily perceived two and three dot symbols are used in the first part of the book, and the more complex four dot characters are reserved for the last part of the book. In order to condition the student to the idea of horizontal reference rather than vertical in determining the position of the dots, the use of the guide lines above and below the dots is gradually eliminated.

In Book IV, all guide lines above and below the dots are eliminated. The most complex combinations of dots to discern tactually are introduced in this volume. The student is required to identify the numbers of the dots in each character, but at no time is he expected to name the character itself.

Research has shown that two factors play an important part in the difficulty of recognizing braille symbols: (1) the greater the number of dots in the symbol, the more difficult it is to identify, and (2) the consecutive use of multi-dot symbols makes recognition more difficult. To help minimize these problems, the space between characters and between lines of braille are gradually reduced in order to prepare the student for the reading of braille as it is normally presented. Accordingly, the first part of Book IV makes use of five and six dot configurations and the second part uses these new symbols in conjunction with those previously learned.

The manual contains no specific instructions regarding braille reading techniques. The authors suggest that, in order to allow for individual differences, the student should be permitted to use the fingers he considers most effective for dot perception. They do feel, however, that the student should be encouraged to use both hands, whenever possible, since this is the method employed by the best braille readers.

As stated earlier, the student is not introduced to the names of the various braille characters in any of the volumes in this manual. He is introduced to the dot numbers of the braille cell in Book III and continues practice in the identification of these numbers throughout Book IV. Obviously, the manual does not provide enough practice material for complete mastery in the identification of braille dots. It is intended as a reading readiness aid only and the exercises should serve as models from which the teacher can develop many more practical materials.

IMPLICATIONS FOR GUIDANCE COUNSELORS AND PRINCIPALS OF RESEARCH ON THE VOCATIONAL SUCCESS OF THE VISUALLY HANDICAPPED

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Energy, time, and financial resources expended on research are poorly invested unless some improvement in practice results. Too often relevant research findings are reported in obscure professional journals to which the average practitioner has limited access and hence the research has minimal impact on improving programs and services. It is with a great deal of pleasure and enthusiasm, therefore, that we share some of the results of our research efforts with a group of concerned professionals who, we hope, will translate findings into improved practice or at least begin to question and evaluate current practices. A final report for this project, funded by Social and Rehabilitation Services, is now available.* In this paper, we will discuss some of the more pertinent findings from this report as well as additional data collected during the project but not analyzed prior to the publication of the report.

As guidance counselors and principals we should be increasingly concerned with the evaluation of our secondary school programs. Such evaluations are often determined by studying the ultimate adult adjustment of our pupils. The direction of needed change can frequently be identified as we look at characteristics of "successes" as compared with "non-successes" and as we ask ourselves questions which we may or may not be able to answer. It is primarily through such an exercise that we can evaluate realistically how well we are doing our job. The purpose of this paper is to review certain findings from our study that have special significance for educators working with visually handicapped adolescents and to raise some questions regarding certain aspects of educational practices and programs.

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*G. T. Scholl, M. K. Bauman, M. S. Crissey. A study of the vocational success of groups of the visually handicapped. SRS-RD-2554-s. Ann Arbor, Michigan: The University of Michigan, Project No. 02248-1-F, 1969.

Relevant Findings from the Study

As is true with most research projects, more data were collected than were included in the report. In this section, we will review implications of some characteristics of the "successful" groups, discuss certain difficulties encountered in analyzing data from test results, and present data not included in the report related to mannerisms and intelligence.

Implications of Some Characteristics of the "Successful" Group

In general, we found that the successful subjects had better vision, higher levels of intelligence, were better educated, and spent the majority of their schools years in a single setting, with a greater percentage spending no time in the residential school. From my own years of experience in both teaching and administration in residential and day schools, I must admit (with regret) that we do tend to favor those pupils with better vision and with a higher level of intelligence because they are responsive to our methods and are easier to teach. It may be that we need to send those brighter pupils with better vision to regular public school programs earlier and concentrate our efforts on those who may be in greater need of our professional assistance and skill. At least we should give this alternative some consideration.

Further, since the less successful did tend toward greater movement between residential and day schools, perhaps we need to re-evaluate the strengths of a particular program in meeting educational needs and to make an early determination of the better program for each individual pupil. A greater degree of cooperation between the two types of programs may result in better education for visually handicapped pupils. When one setting encounters a "challenging" problem, there is a tendency to shift the problem to the other setting, which may be just as poorly equipped to solve the problem. Again, I make this observation from my experience in teaching in both settings.

Let us turn now to some data not included in the report. For the Michigan sample, we compared males by educational level, i.e., those who had some further education beyond high school and those who completed the twelfth grade and under, on the best predictor variables for the criterion variables of percent of time worked, income, and socio-economic index (Scholl, 1969). We found that travel ability was a more important variable for the twelfth grade and under group than it was for those with further education beyond high school. The two groups did not differ significantly in travel ability but the twelfth grade and under group did have poorer vision. This may indicate that we do need to concentrate on the development of independent travel skills especially with the non-college bound since travel ability may be an important factor in their success.

We made another comparison that should be of interest to counselors. Using five categories of job success, as measured by percent of time worked, comparisons were made between the current job and vocational interests expressed by the subject while he was in high school and recommendations of the high school. Tables 1 and 2 report these data. Job success ranges from (1) highest percent to (5) lowest percent of time worked.

TABLE 1

Comparison of Present Job with
Subject's High School Interest
N = 103

Status Comparison:	Job Success				
	1	2	3	4	5
1 category higher	0	1	0	0	0
Same	23	17	10	15	8
1 category lower	2	4	1	6	7
2 categories lower	0	0	1	0	8

TABLE 2

Comparison of Present Job with
High School Recommendations
N = 102

Status Comparison:	Job Success 1	2	3	4	5
2 categories higher	0	1	1	0	0
1 category higher	2	1	1	1	3
Same	23	16	9	17	13
1 category lower	1	2	1	1	4
2 categories lower	0	0	0	0	5

It becomes clear that as subjects move from the most successful to the least successful, so do they, in their expressed interests, as well as their high school counselors in their recommendations, tend to make errors. It is also of interest to note that of the 103 subjects, one is currently employed in a job of higher status than his expressed interest in high school whereas 10 of 102 subjects are currently employed in jobs of higher status than their high school recommended. On the other hand 29 of the 103 subjects are employed in jobs of lower status than their interest in high school compared with 14 of 102 working in jobs of lower status than their high school recommended. Before generalizing about these data we should delve into other aspects. Suffice to say at this point, we should evaluate our counseling practices. We may be encouraging where we should be discouraging and vice versa.

Test Results

Except for measures of intelligence, results from tests administered during adolescence were not highly related to our three criterion variables for vocational success, namely, income from present or last job, percent of time worked, and socio-economic index of present or last job (Scholl, et.al., 1969, pp. 34-8; 188-205). Vocational interest tests were better predictor variables than were personality measures. It was not possible to utilize the results of the complete battery of tests with the subjects because of the variety of tests administered.

In the interview, we asked certain questions designed to tap the subject's view of himself compared with sighted persons and with visually handicapped persons (See Scholl, et.al., 1969, pp. 137-41). From these questions, we developed a rough measure of personal self-evaluation and social self-evaluation. Data from the Michigan subjects showed that this measure had a higher coefficient of correlation to the criterion variables than was obtained on any of the sub-tests of the personality measures employed with the total sample. It must of course be borne in mind that the measures were administered at different times in the subject's life. However, one may wonder whether employing a direct approach to comparing one's self to others may be a more productive measure than the more indirect paper-and-pencil personality test approach in the testing and evaluation process. This should be pursued with further research.

Measures of vocational aptitude were also utilized as predictor variables and showed very low relationships to the criterion variables. Data from the subjects were not analyzed comparing results from aptitude tests to current occupation, however. Such a comparison may yield more meaningful information about use of these tests. Additionally, it may be of value to explore more intensively the job-tryout or cooperative work experience pattern which was discussed during this conference. There is some research evidence that actual on-the-job exploration may be a better predictor for success than results of aptitude tests.

In summary, we might say that results from tests should be viewed as one valuable source of input in knowing about students but that they should not be the only resource. It was disappointing that few subjects volunteered information concerning test results when asked about the kind of counseling they had. It is possible that the counselor utilized test data during his work with a subject without the subject's awareness of this source of input. We would hope this was the situation rather than an alternative explanation that test data collected dust in a file drawer without being utilized by the counselor.

Relationship of Mannerisms to Vocational Success

One superintendent observed at an earlier meeting that he felt appearance was an important variable in determining successful employment. Utilizing data from the Michigan sample, one graduate student did find that the more successful subjects tended to have fewer mannerisms (Sherwood, 1970). Those subjects with a single or no reported mannerisms tended to be among those employed for a greater percentage of time, more were found in the upper income levels, and more were employed in occupations with a higher socio-economic index.

When asked whether the blind had certain mannerisms that made them appear different than the sighted, all those with a single or one mannerism responded "yes" whereas 85% of those subjects with multiple mannerisms responded "yes". Further, more than half the subjects with multiple mannerisms thought they had no mannerisms. Interestingly enough, however, almost half the subjects with no mannerisms thought they had them. These findings lead one to wonder about the accuracy of the self-image of our blind students and whether we can supply them with an adequate mirror through which they can learn to evaluate their appearance realistically. As counselors, we may wish to give some thought to how an accurate self-image can be developed. This is related to the earlier observation from our unpublished data that the rough measure of self-concept, i.e., social self-evaluation and personal self-evaluation, were more directly related to job success than were so-called personality measures.

Relationship of Intelligence to Vocational Success

One of our doctoral students utilized data from the project to study the relationship of varying levels of intelligence to vocational success (Wilhelmi, 1970). His interest in mental retardation and in vocational rehabilitation motivated him to explore the possibility that blindness may change the definition of mental retardation as it relates to the blind retarded. More specifically, is it possible that a blind person with an I.Q. of 85-99 may be as handicapped or more handicapped that the borderline mental retardate with no other handicaps. In analyzing the data he did find, as expected, that both the mentally retarded blind (I.Q. below 85) and the hypothetically retarded blind (I.Q. 85-99) earned less, were in the lower socio-economic index group, and were employed a smaller percentage of time compared with the subjects with I.Q.s above 99. He also found that less money had been spent on them during the rehabilitation process. In comparing the blind retarded and the hypothetically blind retarded, he found no difference in percent of time worked but the hypothetically blind retarded earned more and had a higher socio-economic index. The predictor variable that seemed most important for these groups seemed to be number of other disabilities.

With the influx of the rubellas and their multiple problems, we may need to re-evaluate our educational and rehabilitation programs in order to give them an adequate opportunity to become contributing members of society. This will require a greater expenditure of funds and counselor energy if we are going to reduce the impact of their disabilities on their potential for success.

Some Concluding Questions

All research findings must be interpreted against a background of current and future social, economic, and cultural conditions and trends. Many questions may be asked about school practices and educational programming in the light of our study. We would like to present three that seem to have special relevance. We can give you no answers either from research or from experience; our purpose is to provide you with some food for thought.

1. Is employment a feasible objective for our visually handicapped population, especially those who are retarded and those who have other disabilities, in the light of fewer jobs because of technological advances, increasingly restricted occupational range and particularly with their lower level of job success compared with the rest of society? If we answer "yes", then how can we improve their chances for success considering the variables discussed earlier? If we answer "no", what viable alternative do we offer them during secondary school years in order to help them feel useful and wanted in our culture?

2. Most secondary school programs in our public schools today are criticized for neglecting the non-college bound. What are we doing to improve and modify educational programs to meet the needs of this group? It would seem that opportunities to improve vocational education programs exist through increased federal funding for this purpose. What are we doing to take advantage of this opportunity? How creative are we being in exploring possibilities beyond the traditional type of jobs we have recommended for our students in the past?

3. In the not too distant future, our secondary programs will be filled with the rubellas who present multiple problems. What are we doing to prepare to meet their diverse and complicated needs?

4. What are we doing to improve our programs for pre-work evaluation? Are test results being utilized effectively in counseling? What about increasing our efforts for pre-work evaluation through on-the-job training, part-time employment for juniors and seniors, cooperative work study programs and other practices that may help our students enter the employment market?

The success of our efforts to seek answers to these questions and new directions for our programs will be measured in future studies of job success. Can we do a better job than we have in the past? The answer lies with each of us.

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PRESIDENT'S REPORT

William H. English, Principal

Virginia School for the Blind
Staunton, Virginia

For the past eight years it has been my very real privilege and pleasure to serve our organization as a member of the Board of Directors and as an officer. I was most fortunate in receiving this honor from you and hope that I have fulfilled the trust placed in me.

At our 1956 conference, Sam Ashcroft, when describing his activities as the first Director of Educational Research at the American Printing House for the Blind, so eloquently told the comparative story of the youngster who stubbed his toe on a small stone imbedded in the earth. When he attempted to dislodge the stone he discovered that in reality it was a huge boulder almost totally buried. This fable also well represents the tasks that face those who become directors of our association. It is almost impossible for us to realize the monumental tasks and responsibilities we have until one actually assumes the responsibility for their direction and operation.

Two years ago, in Toronto, our most obvious and pressing need was the securing of a new Executive Secretary and staff. We know that the selection of Mrs. Mary K. Bauman was a most fortunate choice. Under her stimulating and quality leadership many changes have been brought about in our internal structure. It has been amazing to observe the total grasp she has of everything connected with AEVH and the administrative re-organization and "know how" that she has brought to the association's office and activities.

As you know, our headquarters office was moved to Philadelphia in the spring of 1969. We now have very comfortable quarters there with a full complement of office staff. Miss Judith James serves as our Administrative Assistant and has become a most valuable member of the team. Her concentration has been in the area of certification, membership, and preparation for this conference. I hope that each of you will have the opportunity to meet and talk with your office staff. In addition to Mrs. Bauman and Miss James, Miss Beverly Myers and Miss Carol Kropf are also here. The fact that they are all of the feminine gender does not mean that AEVH has formally joined the Women's Liberation Movement.

Prior to our formalized move to Philadelphia the Maryland School for the Blind most graciously provided us with a temporary home and assisted us in locating temporary staff. We are grateful to them for this very generous gesture.

One of the many and varied pleasures afforded me over the past two years has been the full cooperation by so many of our members in serving on committees. Great contributions have been made by many and to relate all of them would entail too long a time period for this brief meeting. However, I would like to mention a few.

The Certification Committee has almost completed revision of the AEVH certification requirements for teachers. This must, and will be, an on-going procedure throughout each biennium. This is the type of committee whose task is never completely finalized. It appears that certification will continue to be a vital service of AEVH for its membership. Many of you already find your salary scales tied to this certification.

In the area of Independent Living Skills, your committee has prepared and submitted to AEVH as complete a reference list as possible from all available North American sources. This reference list will shortly be made available to you through our office. With all programs serving visually handicapped youngsters now involved in such activities this reference list will soon become a vital tool for all concerned.

Because of the work done in previous years and the formation of the National Accreditation Council, following COMSTAC, our Standards Committee and I felt that there was very little need for their being a functioning committee. It will be my recommendation that this committee not be activated for the next biennium.

Though our financial picture is far from depicting an organization of wealth we do feel that we are in a stable position. Therefore, at the decision of your Board, I notified our Dues

Study Committee Chairman that there was no need for a re-structuring of our individual membership dues for the 1970-72 biennium. Though the price of chewing gum will soon become six cents, your AEVH membership fee will remain the same for at least two more years.

The legislative efforts, on the federal level, of AEVH have naturally been directed by the Legislative Committee. Both verbal and written support has been given to various pieces of legislation, perhaps most notably for the programs serving deaf-blind children in the regional centers.

Always we must be thinking of the future and the role of AEVH. This has been the assigned task of our Long-Range Planning Committee. Their report has been received and will be offered to your Directors for 1970-72.

Activity and involvement have and will continue to be the bywords of your association. In the planning or final preparation stages are several funded activities involving joint sponsorship with universities or sister agencies.

Just initiated last month is a year long project on planning for the actual researching of the various braille codes. Jointly sponsored by AEVH and AAWB, this activity was initiated through your Braille Authority and Braille Advisory Council. It is so designed as to culminate in an authentic piece of research work and will involve many people.

Hopefully, the next school year will see several strategically located short term institutes in Mobility Techniques and Practices for the young blind child and in the areas of personal and vocational guidance and counseling. These are planned for joint sponsorship with a number of universities. In some cases requests for funding have already been made and we are planning to submit the others as soon as possible.

The American Foundation for the Blind assisted us with the sponsorship, last spring, of two regional Careers Conferences for high school visually handicapped youth in Atlanta and Seattle. Approximately five hundred youngsters participated in this extremely valuable experience. Our relationships with AFB continue to be very close and further joint sponsorship of projects can be anticipated.

Our second regional conference, held last fall in Los Angeles, was an outstanding success. Further regional conferences are now being planned and it is hoped that their numbers will be expanded to multiple numbers within a year or so. The attendance of three hundred people in Los Angeles is indicative of the response that regional conferences can bring. The interest in them and the enthusiasm they generate is most contagious.

AEVH continues to have fine representation in other national and international affairs. We have been invited to and will participate in the 1970 White House Conference on Children and Youth. The CEC-ERIC Advisory Board maintains a position for an AEVH member and as usual we are represented in WCWB and ICEBY activities.

One project that has indirectly involved most of the total membership of AEVH during the past year is that with the Ladies Auxillary to the National Rural Letter Carriers Association. This has been an opportunity for United States members to tell their "story" throughout their respective states. Many projects throughout the states have resulted and many benefits have been received. In August, at their national convention, this fine group of ladies plan to make a sizeable cash contribution to AEVH. Until the actual presentation we will not know the exact amount but we can assure you that it will be wisely used for the sponsorship of still another AEVH activity.

Our Publications Board remains active. As you probably know it is their responsibility to develop policy regarding all association publications including whether or not a certain piece or set of materials will be published. The long awaited Library Manual was adopted and will be publ ished as soon as possible. Under discussion now is a manual for teachers in the use and instruction of the Nemeth Code.

In the area of publications one extremely noticeable change has taken place within the last two years. That, of course, is the change in name and cover design of our professional journal, now called EDUCATION OF THE VISUALLY HANDICAPPED. The name change was necessitated by the change in our association's name and seemingly is much more appropriate. This professional publication, through the extremely diligent efforts of your two editors, is regarded as one of the leaders in professional educational publications. The FOUNTAINHEAD continues to be just what its name implies, a wealth of information for the classroom teacher and administrator.

This and much more adds up to a busy and fruitful two years culminated by our biennial International Conference in which we now find ourselves involved. This program was keynoted last night by a most stimulating presentation. This will continue throughout the week as you work, discuss, listen, and perhaps, play a little. This is the fiftieth such conference, a golden anniversary. May you take away, as I will, golden memories of your activities here, those I have just discussed with you, and the knowledge that through full and active participation in your association you must become a better prepared teacher of visually handicapped children.

Again, I thank you for the opportunity to serve. I will continue to do anything I can to assist our association in fulfilling its purpose and obligations.

Thank you.

BRAILLE AUTHORITY REPORT 1970

The activities of the Braille Authority have been concentrated upon two primary projects during the past year: First, the continuation of the development of braille codes; Second, an analysis of the needs for research into existing braille usages and unexplored areas of code development.

The development, expansion and clarification of the codes for textbook format, mathematics, and computer symbology have now approached a plateau from which further progress can be made only through a broadened program of research. Specific improvements in the textbook format code were recommended for adoption in the 1969 report. The mathematics and computer codes are in the last stages of development and should be ready for presentation for adoption by the end of 1970. The Braille Authority and its Advisory Committees will have then laid the foundation for techniques and procedures vital to the effective presentations of a substantial portion of literary and technical braille reading matter.

Without a comprehensive program of research, the cut-off point for changes in braille codes appears at hand. To avoid continuous confusion in the field concerning the status of braille rules, it is recommended that only minor clarifications be offered until the projected research program has substantially finalized braille codes.

The Advisory Council to the Braille Authority has been actively proceeding with plans for the funding of a research project to encompass all components of braille codes and embossed representations. To furnish the Council with background information concerning the present status of braille codes and the specific areas requiring fundamental research, the views and recommendations of the experts and specialists serving on Advisory Committees were presented in writing for consideration.

On the basis of this material the Council has submitted an application for a planning grant to a federal agency for the purpose of seeking funding for a broad and concentrated program of research into each specialized area of braille representation in order that permanent standards can be established for comprehensive and effective braille systems.

Respectfully submitted,

Bernard M. Krebs, Chairman
AAWB-AEVH Braille Authority

AMENDMENTS TO THE CONSTITUTION AND BY-LAWS OF THE AEVH

The following changes in dues structure and amendments to the By-Laws and Constitution were made by the Conference, July 1, 1970:

> That dues for School Corporate Members shall be $25.00 per year or .50 per student at that school, whichever is greater.
>
> That dues for Associate Members shall be $5.00 per year.
>
> Section 8 of the By-Laws shall read: The Executive Secretary must be bonded by a reputable surety company.
>
> To Article VI - Amendments, of the Constitution, the following is added: Amendments must be submitted to the Board of Directors, at least four months prior to the business meeting at which the vote is to be taken. An amendment originating in one or more of the following manners will be placed before the Association for a decisive vote: (1) submission by the initiative of at least a quorum of Association members (eligible voting members from at least fifteen states or provinces, totaling at least one-twentieth of all eligible voting members of the Association); (2) submission by a majority vote of the total membership of the Board.

REPORT OF THE NOMINATING COMMITTEE

Margaret Polzien, Chairman

Michigan School for the Blind

The Nominating Committee submitted the following slate of candidates for office in the Association for Education of the Visually Handicapped for the 1970-72 Biennium:

OFFICERS

President
    Mr. Carl J. Davis
    Head, Department of Psychology and Guidance
    Perkins School for the Blind

First Vice-President
    Mr. Lee Jones
    Superintendent, Georgia Academy for the Blind

Second Vice President
    Mrs. Ferne Root Roberts
    Teaching Resource Center
    New York City

Secretary-Treasurer
    Mr. Leland C. Sanborn
    Superintendent, New York State School for the Blind

Immediate Past President
    Mr. William H. English
    Superintendent, Wisconsin School for the Blind

DIRECTORS

Mr. L. Robert Dodge
California

Dr. Verna Hart
Tennessee

Mr. Carl W. Lappin
Kentucky

Dr. Evelyn Rex
Illinois

Mr. Herbert J. Wolfe
Maryland

Following the second reading of this report on July 1, 1970, additional nominations were requested from the floor. None were made. Each of the above listed officers and directors was accepted and elected by acclamation.

HV1788
A

Proceedings of the 1970
Convention of the
American Associaiton of
Workers for the Blind.

HV1788
A

Proceedings of the
1970 Convention of the
American Associaiton of
Workers for the Blind.

DATE	ISSUED TO

AMERICAN FOUNDATION FOR THE BLIND
15 WEST 16th STREET
NEW YORK, N.Y. 10011

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Selected Papers

ASSOCIATION FOR EDUCATION OF THE VISUALLY HANDICAPPED

Fifty-First Biennial Conference

June 1972
Miami Beach, Florida

HV1788
AEVH
1972

AMERICAN FOUNDATION
FOR THE BLIND INC.

15 WEST 16th STREET
NEW YORK, N. Y., 10011

METHODS AND MATERIALS IN THE EDUCATION OF THE VISUALLY HANDICAPPED

Association for Education of the Visually Handicapped
1604 Spruce Street
Philadelphia, Pa. 19103

HV1788
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1972
Copy four

ASSOCIATION FOR EDUCATION OF THE VISUALLY HANDICAPPED

Known first as the Instructors of the Blind, and later incorporated as the American Association of Instructors of the Blind, AEVH began in 1853 with a national meeting of superintendents of sixteen residential schools for the blind. Except for a few years when national emergencies prevented, conventions have been held biennially since that time. At the 1968 convention, the name of the organization was changed to Association for Education of the Visually Handicapped.

In 1952 the Workshop method of national conferences was adopted and membership was broadened to include all who were interested in improving the educational opportunities of visually handicapped children. In the Workshops, educators are able to define problems and work actively toward their solutions. Under the leadership of their own elected officers, workshops may continue in common efforts between national conventions, often producing newsletters or taking action at regional meetings. Student chapters have now been formed at several universities and several state chapters are functioning very effectively. In the planning for the next biennium is a program for regionalization which will provide regional meetings within reach of our members all over United States and Canada.

AEVH publishes a newsletter called the FOUNTAINHEAD, a volume of selected papers from its biennial conference, and provides the professional journal, EDUCATION OF THE VISUALLY HANDICAPPED, for its members. The organization also participates actively in teacher and houseparent certification, training institutes, the development of special standards, the encouragement and report of research in the field, and cooperation with national and international agencies and organizations interested in the education of visually handicapped children and youth. The popular AEVH brochure on education of the visually handicapped as a career is annually sent to many guidance counselors and young people who seek information relevant to their own choice of a profession.

AEVH is affiliated with The Council for Exceptional Children, a Department of the National Education Association.

For further information, write AEVH Executive Secretary, 1604 Spruce Street, Philadelphia, Pennsylvania 19103.

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MEETINGS

The following is a list of the conventions of the American Instructors of the Blind (1853-1871), the American Association of Instructors of the Blind (1872-1968), and the Association for Education of the Visually Handicapped (1968-1972):

1st Meeting: August 16-18, 1853, at New York, New York
2nd Meeting: August 8-10, 1871, at Indianapolis, Indiana
3rd Meeting: August 20-22, 1872, at Boston, Massachusetts
*4th Meeting: August 18-20, 1874, at Batavia, New York
5th Meeting: August 15-17, 1876, at Philadelphia, Pennsylvania
6th Meeting: August 21-23, 1878, at Columbus, Ohio
7th Meeting: August 17-19, 1880, at Louisville, Kentucky
8th Meeting: August 15-17, 1882, at Janesville, Wisconsin
9th Meeting: August 19-21, 1884, at St. Louis, Missouri
10th Meeting: July 6-8, 1886, at New York, New York
11th Meeting: July 10-12, 1888, at Baltimore, Maryland
12th Meeting: July 15-17, 1890, at Jacksonville, Illinois
13th Meeting: July 5-7, 1892, at Brantford, Ontario, Canada
14th Meeting: July 17-19, 1894, at Chautauqua, New York
15th Meeting: July 14-16, 1896, at Pittsburgh, Pennsylvania
*16th Meeting: July 12-14, 1898, at Lansing, Michigan
17th Meeting: July 9-11, 1902, at Raleigh, North Carolina
*18th Meeting: July 20-22, 1904, at St. Louis, Missouri
19th Meeting: August 21-23, 1906, at Portland, Oregon, at Salem, Oregon, and at Vancouver, Washington
20th Meeting: July 14-16, 1908, at Indianapolis, Indiana
21st Meeting: June 28-July 1, 1910, at Little Rock, Arkansas
22nd Meeting: June 25-28, 1912, at Pittsburgh, Pennsylvania
23rd Meeting: June 28-30, 1915, at Berkeley, California
24th Meeting: June 4-7, 1916, at Halifax, Nova Scotia, Canada
25th Meeting: June 24-28, 1918, at Colorado Springs, Colorado
26th Meeting: June 21-25, 1920, at Overlea, Maryland
27th Meeting: June 27-30, 1922, at Austin, Texas
*28th Meeting: June 23-27, 1924, at Watertown, Massachusetts
*29th Meeting: June 21-25, 1926, at Nashville, Tennessee
*30th Meeting: June 25-29, 1928, at Faribault, Minnesota

*31st Meeting: June 23-27, 1930, at Vancouver, Washington
*32nd Meeting: June 27-July 1, 1932, at New York, New York
*33rd Meeting: June 25-28, 1934, at St. Louis, Missouri
34th Meeting: June 22-25, 1936, at Raleigh, North Carolina
*35th Meeting: June 27-30, 1938, at Lansing, Michigan
*36th Meeting: June 24-28, 1940, at Pittsburgh, Pennsylvania
*37th Meeting: June 26-30, 1944, at Little Rock, Arkansas
38th Meeting: June 24-28, 1946, at Watertown, Massachusetts
*39th Meeting: June 21-25, 1948, at Austin, Texas
*40th Meeting: June 26-30, 1950, at Philadelphia, Pennsylvania
*41st Meeting: June 29-July 3, 1952, at Louisville, Kentucky
42nd Meeting: June 27-July 1, 1954, at Batavia, New York
43rd Meeting: June 24-28, 1957, at Worthington, Columbus, Ohio
44th Meeting: June 22-26, 1958, at Vancouver, Washington
*45th Meeting: June 26-30, 1960, at Donelson, Tennessee
*46th Meeting: June 28-July 2, 1962, at Miami Beach, Florida
*47th Meeting: June 21-25, 1964, at Watertown, Massachusetts
*48th Meeting: June 26-30, 1966, at Salt Lake City, Utah
*49th Meeting: June 23-27, 1968, at Toronto, Ontario, Canada
*50th Meeting: June 28-July 2, 1970, at New Orleans, Louisiana
*51st Meeting: June 25-29, 1972, at Miami Beach, Florida

*Copies of convention proceedings or selected papers for these meetings may be purchased by writing to the Association for Education of the Visually Handicapped, 1604 Spruce Street, Philadelphia, Pennsylvania 19103. Copies of the Indexes for 1922-1930, 1931, 1932-1940, and 1944-1960 are also still available.

OFFICERS

For the Biennium 1970-72

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Carl J. Davis
Psychologist, Perkins School for the Blind
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Superintendent, Georgia Academy for the Blind
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Second Vice-President

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For the Biennium 1970-72

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Baltimore, Maryland

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MULTI-HANDICAPPED: THE KING OF CHALLENGERS

Verna Hart, Assistant Professor

George Peabody College for Teachers
Nashville, Tennessee

"I just don't know what to do with Johnny," says a teacher. "I don't know what to do with 'that' class," exclaims a principal. "What will we do with all of these children?" questions a superintendent. And "We don't want *those* kinds of kids in *our* school," comes from the alumnae.

All of these questions are referring to the growing numbers of multi-handicapped children. *What* to do with them, *how* to educate them, *who* should teach them, and *where* they should be directed in terms of potential employment are of concern to all of us working with blind children with multiple problems.

Rather than waiting for the answers, there are things that each of us can be doing now to bring closer the day when we will have better information on what to do. First, no pupil should be viewed as hopeless. Many stories could be told about children who have been excluded from programs because they were too low functioning and who, with intensive work, have been able to perform in regular classrooms with sighted children. At the present time there are no tests, no diagnostic instruments, and no special criteria which can be used to determine future success or failure of a child in a program. Because of this it is important to give *all* children the opportunity to learn. This should not be a brief trial period, but a period long enough to program them in many areas.

Second, we have to stop trying to make the children fit the molds and begin making molds to fit the children. Too often we talk of individualizing instruction and then act as if individualization means having individuals conform to our preconceived standards. Reading, writing, and arithmetic have become our Trinity. Failure to have a child succeed in these areas, whether in Braille or print, becomes a personal reflection on us as teachers. Recent court decisions have stated that *all* children, no matter how retarded or how disturbed, have the right to education and treatment. The fact that we must provide for them means we must think in new terms of educational models. Allowances are made for the cerebral palsied child who has so much brain damage he is unable to coordinate his hands to read Braille, or his eyes to read print. At the same time, however, we fail to make allowances for the child who may have extensive damage to the brain in the language area and thus be unable to make sense of dots or letters. We must accept the fact that some children will not become readers, or writers, or be able to figure complex sets of numbers. There should be no stigma attached to these children, either in our eyes or in theirs. Each child must be valued for his uniqueness, not his conformity.

The latest data gathered about our visually handicapped youngsters show an increasing use of listening skills for those unable to read. We must accept the fact that we have to work as hard at developing listeners as we do in developing readers. Babies are not born able to distinguish sounds and their meanings. Too often parents of visually limited children are not aware of the need to develop such discrimination, and their children arrive at school with no more listening ability than a young infant. In many homes the constant blare of the TV deadens meaningful sounds, and the children, to protect their own ability to function, learn to tune out sounds. Thus useful sounds also become tuned out. We must teach the children to attend to sounds, to ascertain which are meaningful, to delegate others to the background, and to orient themselves to those which can aid them in their surroundings.

How realistic are we in our programming for multi-handicapped children? Often these children receive a watered-down curriculum from what their visually handicapped schoolmates receive. Such a watered-down curriculum puts them even farther behind academically, for these children start out behind the others and need *more*, not less, to compete successfully.

Every subject, every lesson plan should be geared to one thought. "Why am I teaching this? Will what I am teaching today make a difference in the child's ability to function independently when he leaves school?" Are we busy teaching the products of South America to a child who is unable to care for his own needs independently? Are we busy teaching mathematical concepts to young adults who don't yet know the value of money or the amount it takes to provide their basic necessities?

Recent studies are presenting more and more evidence that we are willing to tolerate the differences of those with abnormal behavior or appearance if they are pleasant, likable people. Perhaps our number one task should be to make our children nice people to know. Assigned as a teacher to a residential school's family style dinner table, I watched as one teen-aged multi-handicapped girl used her hand as a pusher for her mashed potatoes and gravy. She filled her spoon, held baby-fashioned in her other hand and wolfed down the food. She put her spoon down to pass a dish of food to me. As I received the dish, thoroughly messy with mashed potatoes and gravy, I commented on the use of her hand as a pusher and on her use of the spoon as well as the manner in which she held it. In disbelief she argued that there was nothing wrong with the way she was eating, because someone would have told her if there was. It is often such seemingly unimportant things that keep our children from being accepted and acceptable.

Surveys show that contacts with handicapped children increase others' acceptance of them. Let's make sure that the contacts are positive ones that show what visually handicapped youngsters can do instead of what they cannot do.

Dr. Ed Martin, in the March 1972 issue of *Exceptional Children* gave some interesting figures regarding our children who will be leaving school in the next four years. He stated only 21% will be fully employed or go on to college. Forty percent will be underemployed and 26% unemployed. Ten percent will be in sheltered settings and 3% totally dependent. I'm sure our rate of employment for multi-handicapped blind students will be even poorer than this. If we are to be successful in our educational efforts, the figures for employment must increase.

So often stress is placed on teachers to have pupils perform academically that all efforts are placed in this direction. Will such efforts result in a better employment record for the students?

Rather than a watered-down curriculum, let's think about new directions for our multi-handicapped. Academic skills should be stressed as tool subjects only, with scholastic aspects receiving emphasis only if it will make a difference in the student's functioning level when he leaves school. Communication skills should be emphasized, not on reading and writing per se, but on whether the student can receive instructions, understand them, and carry them out. Can he process what we are saying enough to ask questions concerning what he does not understand? Has he been taught to *think* or to spout back information that has no meaning? Can he carry on a social conversation? The ability to communicate is of *vital* concern. However, a child may become too verbose and lose meaningful communication. Has he been meaningfully taught some of the cues that he should be getting from his listeners if he is too verbal? Has he had experiences to talk about? Often our multi-handicapped children have had even less experience than their visually handicapped peers. If any of us have been hospitalized or isolated for a period of time, we notice how quickly our conversation deteriorates. Any young mother tied to a home by many small children quickly reflects her environment. Is it any wonder that our children who have had so few experiences have little to talk about?

Experience alone will not lead to communication. Carefully laid plans with specific behavioral objectives must be made before the experiences, and well thought out carry-over must be completed after each experience, no matter how insignificant the actual experience. If it was worth having, it is worth following through.

Major emphasis needs to be placed in any curriculum on interpreting relationships. Our children need to be made sensitive to the reactions and needs of others. Overprotected children become the center of their own universe, with all things coming to them and with no need to reach out and share with others. To perpetuate such activities in the school setting does a grave injustice to the children. They must learn early that life is both a give and take situation. Analyzing another's feelings is important, and the fact that children have multiple problems does not mean they are incapable of determining other's feelings or that they lack them themselves. Many behavior problems are caused by the inability of teachers, counselors or houseparents to interpret the relationships they have with the student and vice versa. Students must recognize that any situation between two people can create problems and they should be taught techniques for avoiding conflicts as well as resolving them.

Self-care skills are extremely important in a student's ability eventually to become independent. Not only should they be able to dress, toilet, bathe and care for all their personal needs, but they should be aware of basic health care. Dirty fingernails are not only offensive to many of those who observe them, they are also a source of bacteria and infection. Both health and social aspects should be stressed. Parents and houseparents should not be expected to do this alone; each person working with the student must be aware of particular problems the student presents and ways in which they can be remediated. Open discussions are necessary. Letters to Ann Landers should never have to be written about our students if we do our jobs well.

Self-care skills should also include basic social graces that those with vision can learn incidentally. Our visually handicapped must be specifically taught and if pupils come to us lacking such graces, we should be the ones to teach them. We should not become guilty by default if a child does not know he may be offending someone by poking his fingers into his eyes, rocking, wiping his nose on the back of his sleeve, or publicly masturbating.

Self-care skills should include those that pertain to the child's functioning safely within his environment. Such safety habits include good mobility skills. Teachers often ask me if I feel mobility should be taught to their multi-handicapped pupils. The answer is an emphatic *yes*! The multi-handicapped children are often less able to take advantage of clues from the environment and so need *more* orientation and mobility training. This alone can often make them more acceptable and able to function within their environment. Economically, mobility makes a dollar and cents difference. Those who have good mobility are better able to find jobs and to keep them. If able to move around and function well within their settings, they are more accepted and less stigmatized as "different." Mobility skills should not be confined to specific class periods. Each day, from the time he arises until he retires, the child is practicing mobility skills.

Development of good work habits and attitudes toward work needs to be built into the curriculum. Employers will often put up with less production if a worker is thorough, punctual, and reliable. These qualities are not developed at age sixteen but should be started at age six or even before the child enters school. Many of our students fail to succeed in a job placement because of poor attitudes or work habits and not because of inability to carry out the work. Somewhere, these habits must be taught, for they do not suddenly appear when a teen-ager appears for his first job.

Many of our multi-handicapped students will not be able to function in other than a sheltered environment. We need to throw out some of our preconceived ideas about what must transpire within such a setting. Keeping "good workers" in a sheltered setting when they could be functioning in a regular position is often justified in terms of "they're more comfortable there" or "our production would go way down--they're our best workers." Keeping such workers does them an injustice, however, for they fail to learn to become comfortable with their seeing peers, and retaining them keeps the multi-handicapped from a chance at sheltered work experience. Sheltered experiences should be for those who need them, and, hopefully, should be a stepping stone to more gainful employment. Such sheltered work experiences should be as innovative as possible. New technical advances are constantly being made in industry and counselors and directors of workshops should be aware of contract jobs open. Such jobs can be begun in a sheltered setting and then transferred when the workers are ready.

Use of leisure time should also be taught. Nowhere in our curriculum do we discuss how much beer one might consume without becoming drunk. Realistically, however, this is a problem that presents itself when the fellows drop into the corner bar on the way home from work. If we are to prepare our students for the "real world," smoking, drinking, drugs, and sex must all be discussed realistically and candidly. The use of leisure time involves more than sticking an earpiece into the ear and turning on a transistor radio.

We must be mindful not only of *what* we teach but of *how* we teach it. The issue of accountability is with us. It's important to think of the functional aspects of what and how we teach but we must also be professionally concerned with our contractual obligation. Do we earn our salary each day that we report for work? Do our children learn enough relevant information each day to warrant our paycheck?

At the same time that the courts are telling us that all children must be taught, we are expected to be accountable for what we teach them, how we treat them and for the total outlay of money spent in relation to effort expended. At no time in our history have those working with handicapped children had more pressure exerted upon them.

Efforts to educate and treat more handicapped children are being expanded while we at the same time are constantly refining the information garnering process pertinent to these children. While the storage of facts increases, court decisions have opened these records for inspection to parents of the children we serve. Problems with confidentiality of records have become an issue.

Multi-handicapped students have more problems than normal children and their files tend to be more voluminous. We, as the personnel involved with these students, need better information on how to keep records, and what to put into them. The danger of computer banks, the masses of intelligence and achievement testing results, and the availability of psychologists, counselors, and others to our population makes information especially vulnerable to breaches in confidentiality. We are liable for such breaches at the same time that we seek the right of privileged information. All of us must learn to live with the threat of lawsuits as we work with our multi-handicapped population.

Thus far I've talked pretty generally in terms of what the children need and very little about how to work with them. Basically, there are a few simple concepts that should be kept in mind by all those working with the child. The mental age of an I.Q. score is a much better indicator of where to begin than the chronological age. If a child is 12 with an I.Q. of 75, he will not be functioning as a twelve year old. His mental age will be that of an eight year old and his abilities will probably be around those of an eight year old. His language will probably closely correlate with his mental age, too. This, then, becomes the starting point. Why frustrate the child and yourself by beginning at a level where you will both fail? The mental age, then, gives a rough estimate of the level of functioning. Begin basic planning there and revise it as the need arises.

A good knowledge of child development is the best aid all can have in building a curriculum. Knowing the ages at which a child can recognize shapes, colors, and think abstractly will help in building a sequential program.

A knowledge of task analysis is also needed. Each task presented to the children must be examined in terms of what goes into the activity. Often children fail, not because the activity was too high level, but because too big a step was given at a time. We often try to get children to skip before they can hop. Analyzing a skip shows that it's a double hop. Such analysis can be carried out in the school and after school activities. A child may not be able to subtract because he lacks basic number combinations. He may be able to do rote counting but not learn money because he has never learned one-to-one correspondence. By breaking down the tasks and analyzing them in terms of the learning problems the children present, we can prevent many difficulties and can help the children gain real success. A knowledge of *what* to present through child development and *how* to present it through task analysis gives us almost unlimited background for working with the students. Coupled with the idea of only teaching relevant things, teaching multi-handicapped children can be a very rewarding experience.

Often classes for multi-handicapped have been given to teachers who have not succeeded with regular classes. The children are isolated and given no special services. Nothing can do more to jeopardize a program than putting a poor teacher with children who have severe learning problems. The more severe the problems, the better the teacher must be to meet these problems and the more help she will need to work with them. These children do not learn by themselves or merely through exposure. They must be taught and their needs demand the best resources in the building. No one technique will be successful with all children. The best teachers are needed and workers must learn to use the "W-W Approach" - whatever works - and be prepared to defend it. "Nothing succeeds like success." And after success with the multi-handicapped, those who have been associated with them will agree that working with more minimally handicapped children no longer seems a challenge.

IS LISTENING THE ANSWER?

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Development of Effective Listening Skills

Listening skills are developmental in nature. Everyone associated with the learning environment, whether it be in the home, the school, or the dormitory, is in a position to influence the child's ultimate level of listening performance. The degree of influence will be highly related to the types of behavior that are encouraged. Too often we have not specified for the student how he can maximize his chances to learn, nor have we provided structured opportunities for him to develop positive listening habits. I'm referring now to learning specific study skills for listening. It has been consistently demonstrated that in adopting specific study techniques, learning effectiveness has been increased (Kranyik & Shankman, 1963; Morgan & Deese, 1969; Robinson, 1961). We need to consider very carefully how study skills and techniques generally associated with study by reading can find application in the aural learning experiences we provide.

It is my purpose to specify some approaches that can be used by the teacher and the student to increase the chances of effective listening and subsequent learning. For purposes of the discussion the term teacher refers to any individual having control over the arrangement of the listening experience.

Opportunities to Practice Listening

Consider for a few moments what the teacher can do to encourage effective listening skills. First, we need to provide a variety of taped or recorded material. The materials should reflect an informational input from a wide variety of content areas. Social studies, literature, and science should be presented as well as special areas such as poetry and foreign languages. Reference material in the form of a dictionary and encyclopedia are currently being developed. To take advantage of the recorded materials already available you should be familiar with the catalog of materials available. The Talking Book program and Recorded Educational Aids to Learning are two available through the American Printing House for the Blind. There are many commercially available cassette recordings which focus on the development of listening skills. The Educational Developmental Laboratories has a series with primary levels especially adapted for use with visually handicapped students. There is a publication currently available and one in preparation which list other firms producing recorded instructional materials (Leach, 1970). Excellent recorded textbook materials at the high school and college level are produced through Recording for the Blind.

It is quite important that the content of the material be appropriate and meaningful to the student. For this reason the teacher must also be ready to prepare tapes for listening. The individual needs and abilities of the students should provide the structure and format for the recording. The increased availability of compressed speech tapes will provide further opportunities to emphasize listening as an effective learning medium.

Providing opportunities for listening is an integral part of the familiarization process; however, listening skill development will not be an automatic outcome. There are other things the teacher must do to complement the opportunities for practice. This brings us to the second major way we can influence the development of listening skills.

Interaction with the Message

The students must be encouraged to interact with the message. We promote such interaction when we pause in our teaching to ask questions of the class. Hopefully, some of the students will even be anticipating what the questions might be. We are all familiar with the many techniques they use when they try to anticipate questions for a test. In the final analysis the student must ask questions of the materials, so this level of student involvement is highly desirable. It's another instance of developing independence, independent study skills.

Asking questions of the material assists the student to focus on his purpose for listening and to organize the information received around that purpose. Here are some questions the teacher can ask and encourage the students to ask about what they hear. Ask your students:

(1) What was the main idea? It's essential to identify the main ideas presented. Without this step, meaning may be vague and recall will be adversely affected. The message may use a list of facts to support a main idea and the student must learn to distinguish between the main idea and the facts that support it.

(2) What was the nature of the selection? Was it funny, sad, exciting, or perhaps controversial? The emotional involvement of the listener may certainly affect comprehension.

(3) Did parts of the selection provide a word picture? At this point it should be recalled that the teacher should exert some control over the selections being used to develop listening skills. Especially with younger blind children, some selections will be more descriptive than others and meaningfulness will be directly related to the range and variety of their prior experiences.

You may also ask, "What part of the selection provided a summary or conclusions?" If you are listening to obtain an overview or the general organization, this may be the level at which you want them to work. Ask, "Were there cue words which alerted you to important parts?" For example, the student should be quickly alerted to words and phrases such as "in conclusion," "the main idea is," or "remember." A statement may also be repeated in a slightly different way. When there is a repetition it should give the listener a clue as to its possible importance. A change in voice, intonation, or emphasis or even a pause may signal an important detail or point. These are clues which the knowledgeable listener will use to advantage.

Another question should relate to the sequence of events. The ability to sequence is an important listening skill especially for blind children. In addition to asking for recall of a sequence, you can provide informal exercises in following a sequence of directions. With practice, a series of oral directions may be increased in number and complexity to further the development of mobility skills.

A final question may ask, "What generalizations were made?" A useful hint is to encourage the students to listen for illustrations, examples, or lengthy explanations, all of which the author may be using to develop a generalization.

These questions may be posed by you, the teacher, or by the students as they gain experience with the listening task. It's important to let the students know there will be questions and generally to expect a certain number. The format for questions should be flexible. There is a need for oral questions prior, during, and following a listening session. Written study questions can also play a part as they require students to attend for specific facts. The teacher may also monitor the learning experience of the group in other ways. For example, you can use non-verbal responses to evaluate the students' progress. Have the students raise their hands at appropriate times. When working with a small group you may direct them to "raise your hand when you hear a main idea" or "raise your hand when you hear a summary statement or a clue word." This approach will allow you to follow-up on inaccuracies or misinterpretations which may be evident. It will certainly increase attending behavior which is so important for listening effectiveness. Mention should be made of the teacher's attitude toward listening and aural learning. Expect your students to listen. Get into the habit of giving directions only once. It is realistic to expect that with practice our students will be ready and able to listen the first time with higher degrees of accuracy.

In discussing the questions that should be asked of the students, reference has been made to the importance of listening with a purpose in mind. Once the student recognizes the purpose for listening he can select the type of questions to ask and assume some responsibility for how he listens, whether distributing the listening over time or re-listening more than once. If the purpose for listening is to gain information he may listen for main ideas or summary statements. He can generalize from the information given and compare statements with his own past experiences. His questions may focus on the what, where, or when type. For general information probably one listening will be sufficient.

If the purpose for listening is to attain a high level of comprehension, he must make an interpretation of what he hears and his questions will be of the why and how type. It is a good approach to have the student put the message into his own words. You may want to initiate this process by asking the student, "What do you think about the message content?" The ease with which he is able to organize the material will largely determine whether relistening is necessary.

There is a third way in which you can influence aural learning, but it is perhaps the most difficult of all. The student must assume responsibility for active listening. You are in the ideal position to assist the student to reach this goal.

(1) The student must become aware of the message format. If he is listening to a textbook he needs to know if it has an introduction or preface section, if it has a summary, study questions, or topic headings. He should want to know if italicized words are defined in the text or if there is a glossary included. In addition to knowing the format, it is especially critical that he know how these parts may be used to full advantage. Introductory segments, study questions, and topic headings are all useful in obtaining an overview and structuring the content for organization. Perhaps it goes without saying that when the meaning of key words is unknown, listening will not be effective. In the event some of these parts are not included, special arrangements may be made to tape a list of topic headings or to write out the table of contents. Techniques to develop an adequate vocabulary should be encouraged. New words may be defined based on the context of the message, but further use of a dictionary is highly recommended along with the general development of spelling skills. Graphics in recorded form present many problems for the listener and whenever possible a written interpretation should be provided.

(2) The student must use recording devices with ease. Complete familiarity with the equipment is essential. There are many individuals with their own personal systems for the retrieval of recorded notes and information. Time limitations do not permit a discussion of these approaches, but the problems of retrieval have been recognized. A system is needed for indexing tapes, both as to the kind and placement of audible signals. Labeling and storage for cassettes may not be as pressing a problem but some system is required.

(3) At the present time many students are using the variable speed capability with good effect. In the near future when compressed speech capabilities are more readily available, it will become even easier to skim or scan the material.

(4) A frame of reference may also be obtained when using a personal reader. Let the reader know the types of information you are interested in obtaining. In keeping with this approach, it is

imperative that the student know the types of information that will be most useful to him.

Listing the topic headings, usually represented in bold face type, quite often provides a basic outline for organizing the material and taking notes.

At this point let me outline what I feel are the basic steps for active listening. The student should be *alert* to the message. First, the listener should anticipate the message, by this I mean to obtain a frame of reference or the sequence of ideas that will be developed.

Second, the student should listen, listen with a purpose in mind--listening for general or specific facts, for general comprehension and understanding.

Third, the listener should evaluate the message in terms of this purpose. He should make an interpretation and generalize to information already available to him.

Fourth, there should be provision for review. It seems highly probable that he will take notes which will represent his organization. Note-taking is highly desirable since it increases attentiveness, prevents side-tracking, and acts to promote further review and ultimate understanding. The final step is to test oneself informally in preparation for a formal test that should always be expected.

An attempt has been made to offer several specific suggestions regarding the teacher's role in facilitating the development of listening skills. For purposes of review they were:

(1) To provide a variety of opportunities for listening.

(2) To ask questions of the material and encourage the students to ask questions.

(3) To specify the purposes for listening, to provide techniques which will alert the student to clues in the message.

(4) To provide suggestions for using recordings more effectively, procedures for retrieval of information, and complementary note-taking skills.

In summary let me say listening is just one method visually handicapped students have of gaining information. Our major concern should be how that information is used in the learning situation. If you are asked, "Is listening the answer?" consider how listening can be used to develop independent study skills and answer in the affirmative.

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AN AURAL STUDY SYSTEM DESIGNED FOR THE VISUALLY HANDICAPPED

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The Aural Study System designed and built at the American Printing House for the Blind (APH) did not just evolve, but rather was the product of several years of systematic study into the processes and procedures involved in aural learning by the blind. The impetus for such research was the oft noted slow reading rates for those who read by braille. Information on these has been concisely summarized by Nolan and Kederis (1969) where it is abundantly apparent that braille, at best, is a poor means of communication.

At the beginning of the sixth decade of this century, personnel in APH's Department of Educational Research became concerned over the slow reading rates of the blind and became interested in the academic utilization of listening as a possible means of alleviating the problem. Search of the literature revealed that, at that time, only one study (Lowenfeld, 1945) was reported where learning through reading and listening had been compared for a blind population. Results of this study showed listening to be the superior mode of communication under a number of circumstances and the faster mode under all circumstances.

The first listening study conducted by APH was done in collaboration with the University of Louisville (Bixler, Foulke, Amster & Nolan, 1961) and concerned comprehension of rapid speech by the blind. Results indicated that, within limits, this approach would be feasible. However, at this point it became evident that, because of the dearth of information concerning aural learning by the blind, the scope of the research effort needed to be extended beyond mere use of compressed or speeded speech.

Shortly thereafter, APH conducted a pilot study (Nolan, 1963) of the relative learning achieved through reading and listening by blind children. Results of this study revealed "no significant differences between listening and reading, amounts of practice or their interaction. ... listening time was about one-third that for reading [p. 315]." These results were a valuable addition to those reported by Lowenfeld (1945) as they were obtained from subjects reading the now commonly used braille grade two whereas Lowenfeld's subjects had read the then commonly used braille grade one and braille grade one and a half. Following the encouraging results of Nolan's pilot study, APH obtained a grant from the Institute of Neurological Diseases and Blindness of the National Institute of Health to study in greater depth reading and listening in learning by the blind. The studies conducted in this series were reported by Nolan (1966, 1968). They provide uncontestable evidence that listening is the superior mode for learning a variety of subject areas, in terms of efficiency, for both elementary (grades 4-6) and high school level students regardless of whether they read by braille or large type (Morris, 1966). Another finding of interest resulting from these studies was that of reading rate for the three types of text material used; namely, literature, science, and social studies. Using materials appropriate in reading difficulty for the grade level of their users, it was found that the average reading rate for the three types of material for elementary students in grades 4-6 ranged from 50 to 60 words per minute for readers of braille and from 69 to 74 words per minute for legally blind readers of large type. Braille reading high school students' reading rates ranged from 65 to 74 words per minute while their large type reading counterparts read at rates ranging from 80 to 86 words per minute. These rates were determined from passages of approximately 2100 words and are considered realistic for study type material. The figures empirically substantiate the fact that the reading deficit, in terms of time required, for users of large type is practically as severe as that for users of braille; consequently, their need for a more rapid mode of communication is practically as great.

Other information obtained through this series of studies pointed up a serious problem of incompatibility between playback equipment, recording formats, writing equipment, and the techniques employed by students when using recorded materials to study. This problem was a result of the equipment and materials having been made for recreational purposes rather than scholastic use. This, coupled with the fact that the number of students depending on recorded materials was rapidly increasing, made it quite evident that a growing need existed for complementary hardware and software geared to aural study.

Early in 1968 a grant was obtained from the U. S. Office of Education, Bureau of Education for the Handicapped, enabling APH to continue with its listening research. One of the specific aims of this project was to design and build a system for study using recorded texts that would coordinate design of playback equipment, recorded book formats, and response systems around the goals for efficient study. Also specified was that the system be evaluated through user tests. Initial specifications for the resulting Aural Study System for the visually handicapped were determined from three sources. First, findings from individual interviews with public school students in New Jersey who regularly studied from recorded textbooks (Nolan, 1966) were reviewed. Second, an analysis was made of the tasks involved in studying from recorded material (Morris & Nolan, 1970b). And third, blind college students who traditionally studied from aural material were queried as to their ideas about recorded textbook format and as to the aural study methods they had worked out for themselves. Additionally, these students were asked for suggestions concerning both materials and equipment that would provide for more efficient use (Morris & Nolan, 1970a).

Working from these specifications, the Aural Study System was designed. It included four major components. These were an especially made record player incorporating the many special features designated as desirable for study purposes, a stereophonic record made for use with the special record player, a written key for use in locating places on the record, and a written supplement containing text material more easily used in written than recorded form.

One of the primary requirements for the Aural Study System was that it provide a means for rapid place finding; this being identified as the greatest problem students have in their use of recorded materials. With this goal in mind, the Aural Study System was designed incorporating two indexing features making possible both gross and fine search. When used in conjunction with each other, they enabled a user to find any desired place on a record with only a brief search period.

The original experimental recording made for use with the system was of a unit on Latin America taken from a world history book (Stavrianos, Andrews, Blanksten, Hackett, Leppert, Murphy & Smith, 1962) for tenth through twelfth grade use. The unit was contained on two sides of a 12-inch record recorded at 8-1/3 rpm. This represented 67 pages of the ink-print edition. Narrow bands about

1/16 of an inch wide divided the experimental recording into 11 parts; six parts being on side one and five being on side two. These bands had a single groove leading through them so that the stylus would be led from the end of one part to the start of the next part without physical intervention by the user.

The record itself was cut stereophonically, meaning that within each groove there were two tracks. Unlike commercial stereophonic systems in which both tracks are played simultaneously, the Aural Study System was constructed to play the two tracks independently. Therefore, different information could be, and was, provided on the two tracks of the record. On one track, the content track, text material was recorded at the rate of 8-1/3 rpm. This material was carefully edited in accordance with the consensus of suggestions coming from the student interviews and the task analysis and included page numbers which were read at appropriate places within the text. On the second track, the index track, index information was recorded at the rate of 66-2/3 rpm--eight times faster than the content track. Index information contained on the index track of the experimental recording consisted of page numbers; however, it could have been any kind of pertinent information. The position of the page numbers on the index track coincided with their position on the content track making it possible for a user rapidly to locate a specific page on the index track, then shift to the content track, and immediately hear the content of the desired page. On both tracks a sound signal was inserted immediately to precede the page announcements. This was done to serve as an attention getter.

A written key accompanied the record showing the parts found on each side and the pages found within each part. With this information, a user seeking a particular page could locate the page on the key and immediately learn the part in which it would be found and the side of the record on which the part would be located. By also noting the range of pages found within the sought part, the user could estimate how far into the part the sought page might occur.

The player was built with a variety of special features of which the most unique were related to its indexing capability. One of these was a photoelectric sensing device mounted in the tone arm which could be used to detect the bands on the record. Whenever this photoelectric sensing device passed over a band an audible signal, or beep, was emitted. The other means of indexing combined the player's multitrack capability with its rapid scanning capability. By engaging either the fast forward or fast reverse operations, the turntable automatically shifted to its scanning rate of 66-2/3 rpm, and, simultaneously, the index track of the record was engaged. Thus, if a user was looking for a page the key had informed him was in the fourth part of the record, he would slowly move the tone arm inward across the record counting the "beeps" as he went. At the fourth "beep" he would know he was at the start of the fourth part. Then, he would estimate how far into the part the page might occur, set the stylus down there, and engage the fast forward mechanism. At the first page announcement, he would either have found the page or know what correction was needed. If he was looking for a subsequent page he would continue using the fast forward until the page was found. If he discovered he had gone too far into the part, he would engage the fast reverse, and back until the sought page was located.

The tone arm of the record player was of a new type featuring stylus pressure light enough to prevent record damage. This tone arm was one that moved horizontally across the record rather than having to be raised before being moved. In addition to the photoelectric sensing device, it contained a retractable pickup cartridge which incorporated a mechanism for positively identifying the record edge.

Other special features of the record player included a turntable pause mechanism featuring instantaneous turntable stop and start. This device enabled a user to stop, as to make a note, without having manually to back the turntable to correct for the glide that occurs on standard models when the turntable is stopped. Another feature unique to this record player was its variable speed control. With this, turntable speed could be increased halfway up to the next faster turntable speed setting or lowered all the way to the next slower turntable speed setting. As the player was built with a three speed capability (33-1/3, 16-2/3, and 8-1/3 rpm), combined use of the turntable speed control and the variable speed control would give a user control of turntable speed over a continuum ranging from 4-1/6 to 50 rpm thus enabling him to pick any desired playback speed. Being a mechanical adjustment, naturally distortion would be introduced as the playback speed varied from the rate at which the record was manufactured to play.

The record player had hand controls for all operations which included tone, volume, and off-on in addition to those already mentioned. Additionally, it had a foot control for the fast forward, fast reverse, pause, and play turntable operations. By use of the foot control, a student's hands would be freed for other things such as note-taking or the examination of graphic material. Other features included an option of either speaker or headphone use.

From information obtained in the student interviews and the task analysis, it was apparent that certain parts of textbooks are more useful in written form than in aural form. To meet these needs a written supplement was provided in braille. However, parallel braille and large type editions are envisioned.

The written supplement accompanying the experimental record was a book containing a title page, a table of contents, and 34 sections. Each section was numbered and referred to on the record by its number (e.g., see supplement 7-9). In this case the seven represented the unit, Latin America being the seventh unit in the text, and the nine represented the ordinal position of the section within the book of supplements. Included in the 34 sections were an outline of headings, three spelling lists, nine maps, seven graphs, a chart, one table, seven sets of study questions, one set of unit activities, three sections of references, and an index. The index made it possible for a user to find the page(s) where specific items would be found. Important as this is to any student, it is a feature usually lacking from recorded textbooks because of the unwieldiness of its use in recorded form.

All components of the Aural Study System complement one another. Together, they provide a means for a visually handicapped student to obtain information in a thorough and highly efficient manner.

The original models of the four components of the Aural Study System were critiqued by a group of blind persons of professional status who were knowledgeable in the use of recorded materials. Their suggestions were compiled and reviewed by in-house committees at APH to determine what modifications should be made in the equipment and materials comprising the system.

After these modifications were incorporated into it, the next step in the evaluation of the system was to try it out, or field test it, with blind students. This was done in two initial phases. First, 36 students who were readers of braille were taught to use the system. These students ranged in grade placement from 5 through 12. Training was given during one regular class period on each day for the first three or four days of a week. On the following day a test was administered to measure the effectiveness of the training. Results showed that the students could learn to use the components of the system quite easily. Problems in use of the player, the written supplement, and the record were documented so that further modifications could be made on subsequent models and versions. The second phase of the field test occurred approximately two months after the first. It involved the 24 high school level students who had participated in the first phase. These students were given one day of review and then spent three class periods (one per day) performing study type tasks using the system. Only high school level students were included in this phase of the field evaluation as the text material was not appropriate for use with students at lower levels. Following the training period, these students were tested on their ability to use the system to perform study tasks. Results demonstrated that these students could use the Aural Study System to perform the required tasks. These tasks included locating information for and writing out short form answers to specific study questions, copying quotations verbatim, outlining, and summarizing. Although the quality of the written responses varied, no particular difficulties were encountered in use of the various parts of the Aural Study System or in its use as an integrated system.

The third phase of the field test will be conducted during the 1972-73 school year. If students can use the recorded version as well as, or more effectively than, the written, advantages to its use would include cost, required storage area, and the fact that one version could be used by all visually handicapped persons rather than separate braille and large type editions being required.

At the time work commenced on the Aural Study System it was decided to develop it as a disc system in the belief that much of the information acquired from development of a disc system would be applicable to tape systems as well. Such thinking was justified as many of the new features appearing on tape systems for use by the visually handicapped, open reel and cassette, are those that were identified as desirable through the Aural Study System project.

One of the primary goals of the Aural Study System project was to provide a manual for use by the visually handicapped containing information on how to study from recorded materials. Additionally, this manual was to provide recording information for these students and their personal readers that could be used in making their own nonprofessionally recorded tapes better suited to meet their needs. Such information would include suggestions on how to incorporate indexing information on the tape, how to handle headings, graphic material, picture captions, study questions, references, footnotes, quotations, new words, proper nouns, etc. This manual should become available during the upcoming school year.

In summary, it is abundantly clear that visually handicapped students can learn and do learn through their aural channels far more efficiently than through their tactual channels or their impaired visual channels. Consequently, it behooves us, their educators, to acknowledge this simple fact and apply our efforts accordingly.

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VOCOM* I - SPEECH COMPRESSOR EXPANDER

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It is generally conceded that we can comprehend the spoken word at rates that are double or even triple normal speaking rates. The difficulty is our physical limitations in articulating the words and syllables. For the last quarter of a century researchers have endeavored electromechanically to speed up speech and maintain intelligibility. Considerable success has been achieved, but, heretofore with a costly, difficult to use instrument. The VOCOM* I, now available from PKM Corporation is much less expensive, easy to operate, and results in more intelligible rapid speech. The implications for the education of the visually handicapped are obvious. The blind student can now ingest information as rapidly as the sighted student can read. The mind and ear are not limiting factors, students should be given this new alternative in learning.

I. Word Rates

Most people are familiar with word rates from recent interest in speed reading. Some sighted people have been trained to read as fast as 2000 words per minute. In the average printed book there are about 300 words per page so the fast reader speeds thru seven pages in a minute or a 350-page novel in less than one hour. Most people do not read that fast. In fact, the average sighted high school student reads at a rate of 250 words per minute so that he would read our 350-page novel in about 7 hours. The severely visually handicapped reader can read print at about half this rate or 150 words per minute so our book would take him 12 hours to read. The blind student may read braille as fast as 100 words per minute so for him the above novel consumes nearly 18 hours for completion.

Talking books for the blind are produced at the American Printing House for the Blind in Louisville, Kentucky, and American Foundation for the Blind, New York, and distributed nationally by the Library of Congress. Numerous state and local groups also produce such material. These talking books are available in the form of discs, reel-to-reel tapes and cassett tapes. The reader for these materials usually verbalizes at least at 100 words per minute and rarely faster than 160 words per minute. At these rates improvement over reading print material or Braille for the visually handicapped is not significant.

The problem is not the ear but the vocal apparatus. There is even physiological evidence that not the hand but the ear is quicker than the eye. Our listening comprehension rate is better than 300 words per minute and for some may go as high as 800 words per minute. The problem is to produce speech compressed to these rapid rates and still maintain intelligibility. This has led to considerable work in the field of speech compression spanning the last quarter of a century.

II. What is Speech Compression?

Basically speech compression is the transformation of a passage spoken at a normal rate into a replica that contains the same verbal message but occupies a shorter time span. Ideally the compressed version would have the same intelligibility as well as maintain the same tone and voice quality as the original. There are numerous ways to increase word rates each with its own advantages and disadvantages. The most obvious is to play a recording at a faster speed. Play a 33 1/3 rpm record at 45 rpm, for example. This is called the speed changing method. If you don't speed it up too much you can understand it, but the tone is certainly changed and you won't be able to recognize the speaker. With some very sophisticated equipment called the harmonic compressor you can alter the pitch and then playback faster to restore original pitch and achieve compression. The same intelligibility as the speed changing method is obtained and voice quality is closer to the original.

Another method that has proved the most popular for the last fifteen years because of the available equipment is the sampling method. In this method very short pieces of the original material are periodically deleted and the remaining pieces brought together to make a continuous discourse. The deleted segments are so short that the original tone and voice quality are maintained. Furthermore, intelligibility is also maintained up to 250 to 300 words per minute. This method is also called systematic deletion since segments are deleted systematically without regard for the portion deleted.

The method of compression employed in VOCOM* I is called Selective Deletion. In this compression method the verbal material is interrogated and the informationless pauses and highly redundant vowel sounds are drastically shortened. The transitional elements (most consonants) are maintained intact to preserve intelligibility. With this method original tone and voice quality are maintained.

III. History of Speech Compressors

Some early researchers accomplished the sampling method of speech compression by taking speech recorded on magnetic tape and cutting out 1/4" to 3/4" segments and splicing the retained segments together. The concept was proven but those who did the splicing were ready for a long vacation.

With the advent of large, high speed general purpose digital computers clever things could be done and any method of speech compression could be accomplished. The problem obviously is the cost to produce a compressed copy. No matter how costs come down we cannot supply every teacher or group of teachers with a computer that will accomplish the desired task.

A special purpose machine easy to use and not too expensive was needed. In the early 1950's a group in Germany[1] and a group at the University of Illinois[2] came up with such a device. The device electromechanically performed systematic deletion. Basically it consisted of a tape player, a tape loop with rotating heads and another tape recorder. The device first marketed by a German firm was called the Tempo Regulator. It was later improved and marketed as the Eltro Rate Changer Mark II and currently Mark III. The University of Illinois gave Discerned Sound of California exclusive patent rights to their invention which is currently marketed as the Whirling Dervish. These machines suffer from several basic disadvantages and hence have not enjoyed widespread use in the education of the visually handicapped. These disadvantages are: 1. They are expensive ($3500 or more). 2. They are difficult to use, in most cases a skilled technician is required. 3. They are difficult to maintain and adjust. 4. They suffer from the basic disadvantages of systematic deletion, intelligibility drops off rapidly with word rates in excess of 275 words per minute. There are electronic speech compressors under development which will probably overcome disadvantages 2 and 3. They may in a few years result in a significant price reduction but they will never overcome 4.

VOCOM* I introduced by PKM Corporation in April of 1972 overcomes all of the above disadvantages. It is compact (the size of an overnight case), lightweight (17 lbs.), easy to use, maintenance free and currently sells for under $1000. Furthermore, it is the only compressor that uses Selective Deletion so higher word rates can be obtained. The hope is that now compressed speech can come out of the research laboratory and into the classroom.

IV. Implications for Secondary Education of the Visually Handicapped

Because of available equipment almost all subjective testing done in the past used the sampling method of compression. Preliminary tests show that speech compressed using Selective Deletion is more intelligible and more comfortable to listen to.

An early piece of research[3] done by Foulke, Amster, Nolan and Bixler shows that, even with the sampling method of compression, comprehension of blind listeners for both literary and science material decreases only slightly as word rate goes up from 175 words per minute to 275 words per minute. Numerous other studies of comprehension of compressed speech give the same results. Degradation at faster rates is due in part (if not entirely) to the compression method.

Another facet of speed listening is the increased efficiency. If a student gains only half the information in a passage but covers twice the material in the same time his knowledge intake per unit time is still the same. In point of fact he comprehends much more than half. Tests have shown that in measuring information per unit time that 275 words per minute is the most efficient listening rate. The compression method in all these tests was systematic deletion.

In the use of compressed speech in the education of the visually handicapped student we must be aware of his verbal abilities. The sighted student learns to read printed matter in first grade. He is already accustomed to listening and comprehending at perhaps 80 words per minute. His reading ability slowly increases and by 4th grade the average student reads at 150 words per minute or higher. By high school his reading rate is 250 words per minute and in many cases much higher. On the other hand a blind person has *never* had material presented to him faster than about 175 words per minute.

As the sighted student is trained to increase his verbal skills and improve his reading rate so the blind student needs training to increase his verbal skills and improve his *listening rate.* Once trained, unlike speed reading, the capacity for speed listening is maintained. Since aural material presented to the ear forces the word rate on the listener, blind students can be trained to listen to faster and faster rates and compete with sighted students in reading rate.

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A COMPARISON OF THE EFFECTIVENESS OF STANDARD PRINT AND LARGE PRINT IN FACILITATING THE READING SKILLS OF VISUALLY IMPAIRED STUDENTS

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The Problem

Educators of visually impaired children are increasingly concerned to help them make the maximum use of residual vision by: (1) direct training of visual skills, (2) use of low vision aids, and (3) use of large print materials.

This concern has been brought into focus by the realization that the majority of visually impaired children--including many in the legally blind category--are print, not braille readers, and that the increasing reading load in schools today, together with the trend toward educating visually impaired children in the public schools, puts an inordinate burden on the handicapped child unless he can utilize the same materials as his peers and be assisted to achieve comparable levels of attainment in the tool subjects.

Though objective evidence is lacking regarding the relative merits of standard print and large print in facilitating the reading skills of visually impaired children, a trend towards greater use of large print can be observed, especially in the last five years with the entry of a large number of publishers into the large print market.

Purpose of the Study

The purpose of the study was to determine whether visually impaired high school students performed differently on measures of comprehension, reading speed and visual fatigue on standard print and large print material, and what relationship preference for a particular size of print had on reading performance. Additionally, it was decided to explore any differences between the performances of partially sighted and legally blind students.

It was hypothesized that visually impaired high school students would attain higher scores on the standard print test than on the large print test, and that partially sighted students would score higher than legally blind students. It was also hypothesized that visually impaired students would perform equally well on preferred and non-preferred size of print.

Design of the Study

Subjects

Twenty-four legally blind and 17 partially sighted students took part in the study. All students had been judged capable of reading print and had received a very thorough optometric evaluation and, when necessary, had been fitted with corrective lenses for near vision.

Procedure

In order to equalize practice efforts and fatigue factors favoring either standard print or large print, the students were randomly divided into four groups and the presentations of the standard print and equivalent large print forms of the Davis Reading Test were alternated. All students were tested individually by the writer. They were free to choose whatever low vision aids they required and were allowed as much time as they needed in order to complete the test.

Materials

Two equivalent forms of the Davis Reading Test, consisting of reading passages followed by multiple-choice questions, were utilized.

Test modifications

The Davis Reading Test was made available in standard (10-point) print and in large (18-point) print. The reading passages were placed on the left-hand pages with the multiple-choice questions opposite them on the right-hand pages.

Test conditions

The students were tested under flexible conditions. Each student was free to choose his most comfortable reading distance and level and angle of illumination. Optical and non-optical aids were freely available and unlimited time was given in which to complete the tests.

Test measures

The students read the timed test passages silently and responded orally to multiple-choice questions which were scored by the examiner. Measures of comprehension, reading speed, reading distance and visual fatigue were obtained. After completing the second test the students were asked to state their preferred size of print.

Analysis of the Data

The hypotheses concerning preferred size of print were analyzed using a two-tailed t-test concerning means on related samples. All other hypotheses were tested using a three-way analysis of variance.

Conclusions

The prediction that visually impaired students would perform better in standard print than in large print on measures of comprehension, reading speed and visual fatigue was not accepted. However, performance was as good on the standard print test as it was on the large print test on the measures of comprehension and reading speed. The comprehension of both the legally blind group and the partially sighted group was as good on standard print as on large print, and both groups read standard print as quickly as they did large print. Furthermore, the legally blind students found standard print no more fatiguing to read than large print. The only advantage conferred by large print was found among the partially sighted students who experienced less visual fatigue when reading large print than when reading standard print.

Partially sighted students read faster than legally blind students but the two groups achieved comparable levels of comprehension.

Performance was found to be as good on the non-preferred print size as it was on preferred print size.

Large print offers little advantage insofar as reading distance is concerned, and no advantage to those students using strong corrective lenses.

Visual acuity was not related to performance on the measure of comprehension, but both standard print and large print were read faster by those students with higher acuities who also experienced less visual fatigue on large print.

Speculations regarding the relationship of I.Q. to performance were inconclusive.

The writer therefore concludes that standard print is as effective as large print in facilitating the reading skills of comprehension and reading speed for both legally blind and partially sighted students. Large print appears to offer an ease of seeing for those students whose visual acuities approach the normal range, but offers little advantage in an increased reading distance. No reliance is to be placed on a subjectively determined preference for a certain size of print. Higher visual acuity enables both standard print and large print to be read faster but does not facilitate comprehension any more than does lower visual acuity.

Recommendations

The students in this study were fortunate in having thorough and repeated optometric evaluations that included correction for both distant and near vision. Specific assistance was given to motivational problems and in aiding the students to understand and use their optical aids effectively. The students also received direction in the utilization of visual skills, the initial thrust of this recently introduced program being toward the teaching of print reading and the overcoming of emotional barriers to reading. It is recommended that this type of assistance be provided for all visually impaired children. Parental education and involvement is seen to be crucial since the parents of a number of students were procrastinating about allowing their children to be fitted with the necessary optical aids.

There is reason to believe that those visually impaired individuals who have received correction for near vision and who can see well enough to read print should, in most cases, be able to use standard print materials. Attention must be given, however, to providing optimum reading conditions. Large print will continue to have value for many people with very low acuities who cannot for physical or psychological reasons use standard print, or for those whose work demands an increase in the size of print.

Evidence presented in this study points out how unreliable visual acuity is as a guide to reading ability, though higher acuity undoubtedly facilitates reading speed. It is therefore recommended that emphasis should be placed on an individual appraisal of each visually impaired student to ascertain his functional use of vision. An objective measure of the reading skills of each individual is needed, rather than placing reliance on a subjective preference for a certain size of print or on offering guidance based on a measure of visual acuity.

Despite the adequate illumination in the room in which they were tested, most of the students in this study chose also to use an angled reading lamp at high intensity when taking the test. It is therefore recommended that an adequate number of reading lamps having variable intensity levels be made available in classes for the visually impaired.

For those who read by holding the book very close to the eyes, it is considered better to move the book rather than the head when scanning the lines of print. The writer found that the majority of students used the latter method and most of them made frequent changes of posture, some holding the book close up to the face, others placing the book flat on the desk and hunching up over it to read. Very few chose to use a reading stand. It is therefore recommended that students be taught how best to read by moving the book in front of the eyes. Research is recommended to devise a means of holding the book at eye-level that would enable the individual to move the page horizontally across his field of vision and, at the end of each line, move the page vertically and across to the beginning of the next line.

Where large print materials have to be used it is recommended that the size and weight of the book be reduced, and that the binding be such that the pages can be flipped over to be held against the back of the book--a very effective means of reducing its bulk.

This study is limited in that the period of reading demanded of the students was rather brief. Research is therefore indicated to determine which size of print best facilitates longer reading periods. Research is also needed to explore the use of large print materials vis-a-vis optical aids. It could be that it is less fatiguing for some individuals to read large print without optical aids than it is to read standard print with the help of optical aids. In view of the slow reading rate of the visually impaired students it would be of interest to determine whether rapid reading techniques might foster speed of reading. Also it must not be forgotten that if a student reads at a very slow rate his main mode of imput may have to be an auditory one to overcome the difference in reading rate between the sighted and the visually impaired.

DEMONSTRATION OF THE
PEABODY LANGUAGE DEVELOPMENT KIT LEVEL # P

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What is language--and what is it that we as teachers are trying to develop when we begin a language development program?

Dr. Tina Bangs, who is prominent in the field of language and learning disorders, defines language in its broadest sense as communication. Communication begins as action and results in some kind of response between people.

Teaching children to become aware of, to modify, and to control their own actions which automatically illicit some response in others, is what language development is about. But it is more! Language develops from concrete experiences. One good graphic illustration depicts language as a tree. Its roots are sensory experiences which need as nurturing soil an accepting and stimulating environment plus time for growth and maturation. The trunk of the tree represents the interpretation of the stimuli received by the senses--hearing, seeing, smelling, tasting, and touching. The limbs of the language tree are listening, thinking, talking, reading, and writing. Now language becomes an expression of what has been received and interpreted or conceptualized.

In a program for language development the foremost goal is to provide concrete sensory experiences for the child in an environment that is stimulating and accepting. Allowing the child to mature and grow at his own rate, giving him time, is essential. It is necessary to utilize a multi-sensory approach to stimulate all of the senses each child has working for him.

The Peabody Kits are designed to stimulate the receptive or sensory channels, especially auditory, visual, and tactual. These

Kits enable the child to build concepts, that is, to interpret, sort, code, and associate what is received through the senses, and finally to express himself vocally or motorically. "The emphasis is on listening, thinking, talking, and understanding speech and verbal relationships through activities that are highly motivating." (Peabody Manual, Level #P, p. IX)

There are four levels of the Peabody Kit: Level #P, Levels #1, #2, and #3. Level #P is the most recent and the lowest level. In 1967-1968 this Kit was introduced to expand the materials downward so that an early and continuous language program could be provided for children with mental ages of three through ten. Although the materials in the Kit were designed for the overall language development of disadvantaged and retarded pre-school children, they do work effectively for visually impaired children in kindergarten and first grade.

The #P Kit contains a manual with 180 daily lessons. Although a few lessons are not well received by individual groups of children, the manual is generally well planned and easy to use with a minimum of preparation. Some of the activities stressed in the manual are listening, following directions, naming, remembering, sentence building, sound identification, describing, guessing, pantomining, and touching.

There are two metal carrying cases. The smallest case is 14" x 8½" x 11". It contains a set of 396 vocabulary building stimulus cards. These 7" x 9" cards are in color and are relatively free of shadow. Many are outlined in black making them especially effective for children with low vision. The stimulus cards are lithographed on triplex-laminated playing card stock and plastic coated for durability. The weight of the card makes labeling in Braille easy and effective. The upper right hand corner of each card has been snipped making concepts of top-bottom, and right-left easy to demonstrate. This card file encompasses the broad general areas of clothing, animals, food, transportation, toys, household items, community helpers, number concepts, and story cards.

Other manipulative materials are in abundance, and are especially enjoyed by children who are visually impaired. Three colorful puppets (P. Mooney, Elbert the Elephant, and Gasless Goose) come to life for the children through stories and activities. There is a P. Mooney Bag which is large and made of cloth. Activities which stress memory, guessing or identification by touch are enhanced by the P. Mooney Bag. Magic becomes possible in the classroom by a wave of the P. Mooney Stick or wand. Helping children pretend, stimulating the imagination is a vital part of this language program. For introducing songs for language development there is a xylophone with hammer as well as six music cards. Two hundred-forty plastic chips in eight colors are useful for behavior modification tokens, counting, color concepts, or development of fine motor skills. Forty-five magnetic geometric shapes provide stimulating manipulative activities to teach shape, size, and color. Twenty-two other magnetic strips are included to teach concepts of length and width.

The large carrying case can be used to display the magnetic materials. In addition it provides storage for twenty-one plastic fruits and vegetables. It is always desirable to provide initial experiences with real objects and then to proceed to three dimensional replicas followed by pictures. The colorful, life-like plastic food items are durable and well received by children because they like to eat and enjoy handling and talking about foods.

Two solid manikins and thirty-three items of vinyl clothing are housed in the large case. These materials have not proven effective for me for groups larger than four. The small number of manikins and the difficulty in manipulating the vinyl clothing causes confusion and frustration when the group is large.

These materials, as well as one disassembled manikin consisting of nineteen body parts, are useful in teaching body parts and naming clothing appropriate for the season and occasion.

Included in this Kit are ten 7" records with P. Mooney stories and songs for language development. Sounds of the environment to develop gross sound discrimination include: Sounds of Animals, Sounds of the Home, Sounds of Ways to Travel, Sounds of Toys, Sounds of People, Sounds of Places, Sounds of the Circus, Sounds of the Department Store, etc.

Not suitable for Braille students are six 28" x 43" story posters. If the children have fairly good vision, the posters are excellent stimulus materials.

To make the Peabody Kit work for the development of this global aspect of language there are several important considerations. Language or Talking Time should be scheduled as part of each week's activities. Ideally, daily lessons should be presented. Our school provides three thirty-minute sessions each week.

This is a talking time for the children. The activities are child-centered and taking turns and assuming leadership roles is an important aspect of this program.

The manual proceeds from easy to more difficult and thus using it sequentially is important.

Within one lesson there may be stress upon such aspects of language as:

1. Having a conversation.

2. Taking turns.

3. Increasing vocabulary.

4. Verbalizing feelings.

5. Gross auditory discrimination.

Each lesson accomplishes its goal without reading, writing, or drill as we usually think of it. It should provide a break in the daily school routine when spontaneity, conversation and activity are encouraged and rewarded.

TOYS FOR TOTS

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Introduction

During the last ten to twelve years, a general awareness of the potential of young children and the importance of parents in children's early development has permeated the thinking of educators and researchers alike. Young children and their parents have been discovered! The Age of Aquarius is gone; the Age of Early Childhood Education is here. A forward thrust is being focused on early identification and intervention programs. At present, educators appear to be in agreement concerning the value and need for early education but are not in agreement as to how it should be done. The literature is bulging with reports of the many efforts in experimental early education--projects, studies, and claims of intervention programs, all designed to compensate for the many developmental disabilities of young children with various physical and/or environmental deficits.

Instructional Materials Center Project

This paper concerns a two-phased project developed by the Instructional Materials Center, State of Illinois--a project designed for developing a parent-involved program for severely, visually handicapped pre-school children. PHASE I concerned children aged 0-3 years; PHASE II concerned children aged 3-5 years.

PHASE I

PHASE I of this project was a unified effort of the Instructional Materials Center, State of Illinois, and the Title VI, ESEA program in Springfield, Illinois. In the pre-planning stage, Gloria Calovini, Director of the Instructional Materials Center, Illinois, presented the idea to the Title VI personnel and invited its cooperation. This combined effort was strengthened by the assistance and talents of a working committee composed of 18 additional Illinois people interested in young children, including parents.

Goal

The goal of PHASE I was the development of three sequential toy kits for the very young blind child to use in his home, with parental guidance. Each kit was developed for an approximate age group. KIT #1 for 0-1 year; KIT #2 for 1-2 year olds; and KIT #3 for 2-3 years old. Commercial toys as learning materials were evaluated and selected for their value in challenging and stimulating sequential development in the child. The kits were not meant to be all inclusive. An informational booklet, written to the parent, was included for parent guidance in the use of the toys in the kit. Included also in each kit were two comprehensive guides: "Guide for Parents of Pre-school Visually Handicapped Children" written by Dorothy Bryan and published jointly by the Office of the Superintendent of Public Instruction, The Instructional Materials Center, Child and Family Services, and three regional Title VI projects in Illinois in 1970; and "The Visually Impaired Child: Growth, Learning, Development -- Infancy to School Age" by Carol Halliday of the American Printing House for the Blind, Louisville, Kentucky, in 1970. The Instructional Materials Center accepted the responsibility for distribution of the kits. At present, 12 kits have been distributed for field testing.

Philosophy and Rationale for a Parent Involved Program

All children, including the visually handicapped, come into the world as tiny, stirring, curious, little, reflex beings. Each begins to learn at birth and each will become a product of all his experiences. All have basic needs. First learnings are involved with moving. The infant is said to be in a sensory stage--he reacts to sounds, tastes, sights, smells, touch, and movement. For the young blind infant, the visual channel is missing, but for most, the other sensory channels are intact. All children, including the blind infants, react to feelings and emotions--as they are held, fed, bathed, or changed. Through these early learnings, each becomes aware of himself, then others, and then his environment. As he becomes a toddler, he will explore, discover, and assimilate a lot of information from his ramblings. His curiosity forces him to be highly motivated by the materials around him. As he continues in this sensory stage (from 1 to 2 years), he continues to listen, to smell, to taste, to manipulate, to move, and to look.

His general motor patterns, both gross and fine, develop and he learns to handle himself. He rolls, sits, crawls, walks, runs, and jumps. He pushes, pulls, grasps, and releases--all movements he will later transfer into such activities as holding a spoon, grasping a cup, and buttoning his coat. With the general motor patterns pretty well under control, his specific motor patterns develop--especially eye-hand coordination, which he will later use in reading and writing. Because the blind child "sees with his hands" and discriminates auditorilly, he will develop "ear-hand" coordination. Along with the special motor pattern development, the child begins to babble and talk. As his language develops, he begins to put names and meanings to his sensory experiences and moves on to the perceptual-motor stage of development. All this busy work is called PLAY. For all young children, play and learning are inseparable, and through their playthings, meaning is given to their world. Because play is a way of learning by doing, and toys are the essential tools, the reward will be greater if such play is in an enriched stimulating environment with a good emotional climate. The child is busy getting his prerequisites for entering first grade and academic work. Whether this future education will be developmental, or remedial will depend upon the foundation laid in his early years. The way he feels about himself, his own self-respect, confidence, and worth, will be a combination of his own sense of trust, his own sense of autonomy and his own sense of identity. All this will depend on how well he has been accepted, stimulated, and appreciated. The little blind child is unique. He has the needs of all other children, plus more. To experience his world, he will need more motivation, encouragement, and instruction. He needs a systematic introduction to his world, to people, to things around him, and even to himself(3). He will need to be helped to develop his own self-awareness, his awareness of others, and his awareness of the space around him. Because he cannot see, he needs to be handled more, talked to, and shown how, if he is going to explore and understand his environment. He needs to have his curiosity stimulated--and if he is going to get anything from his toys, he will have to be shown how to find and play with them.

Parent Involvement

Responsibility falls heavily on parents as the first teachers a child knows. Whether the child learns to trust, or mistrust; feels capable of making his own decisions, or doubts himself; whether he has self-initiative, or guilt; whether he is industrious, or willing to let others do for him--all his own feelings about himself will be dependent upon how well his parents performed their tasks in his early years. Self-worth and a sense of dignity are important to us all. The greatest need of a young blind child is to have parents who understand his problem, can adjust to it, and can foresee his immediate and future needs. Parent understanding and participation are especially needed by the young blind child in his earliest years. The current trend in education is to include parents as an integral part of all education programs for handicapped children. Not only does this involvement help produce a more capable child, but it also provides for the needs of the parent. Through encouragement to develop his parental skills, the parent may be helped himself as he goes through such emotional levels as shock, panic, denial, and retreat, before he can finally adjust to his child's disability.

Home guidance programs help a parent in several ways:

1. Knowing where a child is in his developmental sequence.

2. Knowing how to look ahead to the next step in his development.

3. Knowing how to use techniques and equipment in helping his child move to the next step.

4. Understanding the importance of daily practice (for both child and parent).

5. Understanding that for the very young, input is necessary before output can be expected.

The intent of this project was to provide information and guidance to the parent in the use of challenging and stimulating toys for sequential development in self-awareness, gross and fine motor ability, language and cognitive ability, and social skills for the very young blind child. The toys selected for the kits were commercially-made toys. It was hoped that with parental interest and involvement, the experience for both child and parent would be enjoyable.

Procedure

A statewide committee was selected and invited to attend a two-day workshop. Representatives of toy companies were also invited to attend and display their wares. At the first workshop, the committee was divided into four groups. Preceding the presentation of the toy representatives, the committee members were briefed on the evaluation techniques to be used (see evaluation charts). Following presentations from the "toy boys," each member was asked to evaluate each toy on an evaluation sheet, designed and prepared in advance, keeping in mind that the toy would be used by a blind child. The groups were divided under the following headings:

Group I	Toys for Early Motions
Group II	Toys for Gross Motor Motions
Group III	Toys for Fine Motor Motions
Group IV	Miscellaneous

In general, the factors for consideration in the selection and evaluation of the toys were:

1. The purpose the toy serves in accomplishing its aim.

2. Interest of the child--Is it fun?

3. Adaptability of the toy for various uses and age groups (multipurpose).

4. Opportunity for development of:
    Body image concepts.
    Gross and fine motor ability.
    Directionality, laterality, and spatial awareness.
    Balance and coordination.
    Manipulative, constructive, creative ability.
    Early concepts.
    Identification.
    Social and emotional behavior--"joy of living."
    Language and communication.

5. Safety factors: trustworthy, well made, durable, non-toxic, rounded edges.

6. Ease of handling. For the infant, is the toy large enough it cannot be swallowed? Is it soft and cuddly? Is it light?

7. Ease of keeping clean.

8. Does the toy provide for early sensory development (hearing. feeling, tasting, kinesthetic, smelling)?

9. Does the toy attract?

The data were compiled and on the second day of the workshop, returned to each group, who then met separately to summarize, classify, and list the value of each toy as to its auditory, tactile, kinesthetic, and body image concept stimulation. Before dismissing, the entire committee reconvened. Catalogs and forms were provided for the final selection of toys in each group. A writing committee was appointed for preparing the booklet for the parent. At a second two-day workshop, the final selection of toys was made, and the booklet presented and discussed before preparation for final publication.

Slides

The Instructional Materials Center now has a stereo-slide presentation for use in workshops and a booklet explains the purpose, the sample toy, and the manufacturer for each.

PHASE II

PHASE II of this Instructional Materials Center project again was a committee project--this time with 24 members, some from PHASE I and some new members.

Goal

The goal of PHASE II was the development of a comprehensive "Guide for Parents" for blind children ages three to five. Whereas the emphasis in PHASE I had been on the use of commercial toys, the emphasis in PHASE II was on activities and games for sequential development in self-awareness, gross and fine motor ability, language, communication, cognitive ability, and social skills. Again the committee was divided into groups, each group assigned to prepare sequential activities for one area of development. Following the first workshop, these groups met at convenient places throughout the State and compiled their materials. At the second two-day workshop, each group presented its work for discussion by the entire committee. A writing committee was appointed and following several meetings, completed the guide. This is now in the hands of the publisher and should be ready for distribution September 1972. Seven sections are included in this guide to be published as an easily understandable chart-like manual. Each page will have three vertical columns, each representing an age level--3, 4, 5. The seven sections are:

I WHAT DO I TOUCH? (Tactile Discrimination)
  Size
  Shape
  Texture
  Temperature
  In School

II WHAT DO I HEAR? WHAT DO I SAY? (Auditory Discrimination)
  Where Is The Sound?
  How Are Sounds Different?
  What Does The Sound Mean?
  Is The Sound Important?
  What Do I Hear?
  How Do I Answer?
  What Do I Hear At School?

III I USE MY BODY. (Body Image)
  This Is My Body
  This Is Your Body

IV I CAN DO IT. (Self-Help)
  Let's Eat
  I Can Dress Myself
  I Go To The Bathroom
  I Wash My Hands And Face
  I Brush My Teeth
  I Comb My Hair

V THE CHILD LOOKS AT HIMSELF. (Identity)
  Who Am I?
  Who Are My Friends And Family?
  I Like Myself
  I Like My Family
  This Is My Home--My Yard

VI WHAT DO I SEE? (Minimal Vision)
  At Home
  In My Neighborhood
  At School

VII LET'S WALK. (Mobility--Motor Development)
  I Walk At Home
  In The Yard
  In My Neighborhood

At School
I Can Stand Straight
Run
Jump
Hop
Skip
What Do I Smell At Home?
In The Yard And Neighborhood
Distance And Direction
Number

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EVALUATION OF TOYS FOR YOUNG BLIND CHILDREN
(Six Months To Three Years)

TOY ______________________ DESCRIPTION ______________________

GROUP I EVALUATION FACTORS EARLY MOTIONS	AGE LEVELS				
	0-6 mo.	6-12 mo.	12-18 mo.	18-24 mo.	2-3 yr.
Offers Results From Random Motions					
Encourages Use Of Both Hands					
May Be Used With One Or Both Hands					
Useful For Grasp And Release Training					
Useful For Reach And Placement					
Encourages Babbling					
Sound Attracts					
Action Attracts					
Encourages Leg Motions					
Encourages Locating Toy					
Develops Early Tactile Discrimination					
Gives Satisfaction - Pleasing					

EVALUATION OF TOYS FOR YOUNG BLIND CHILDREN
(Six Months To Three Years)

TOY ______________________ DESCRIPTION ______________________

GROUP II EVALUATION FACTORS GROSS MOTOR	AGE LEVELS				
	0-6 mo.	6-12 mo.	12-18 mo.	18-24 mo.	2-3 yr.
Requires Big Motion Action (trunk, arm, legs)					
Encourages Locomotion					
Offers Resistance For Development of Strength					
Provides Opportunity For Problem Solving					
Develops Body Image Concepts					
Develops Spatial Awareness					
Encourages Balance Activities					
Requires Steady Movements					
Encourages Shoulder Motions					
Encourages Leg Motions					
Gives Satisfaction Of Achievement					
Auditory Facilitation					

EVALUATION OF TOYS FOR YOUNG BLIND CHILDREN
(Six Months To Three Years)

TOY ______________________ DESCRIPTION ______________________

GROUP III EVALUATION FACTORS FINE MOTOR	AGE LEVELS				
	0-6 mo.	6-12 mo.	12-18 mo.	18-24 mo.	2-3 yr.
Requires Fine Coordination					
Develops Tactile Discrimination					
Encourages Wrist Motion					
Encourages Elbow Motion					
Encourages Supination					
Encourages Opposition					
Encourages Size Discrimination					
Encourages Form Perception					
Encourages Concentration					
Requires Steady Movements					
Develops Body Image Concepts					
Encourages Pincer Motions					
Auditory Facilitation					

EVALUATION OF TOYS FOR YOUNG BLIND CHILDREN
(Six Months To Three Years)

TOY________________________ DESCRIPTION________________________

GROUP IV EVALUATION FACTORS MISCELLANEOUS	AGE LEVELS				
	0-6 mo.	6-12 mo.	12-18 mo.	18-24 mo.	2-3 yr.
Safe Non-toxic Rounded Corners					
Large Enough - Child Cannot Swallow					
Sturdy - Well Built - Trustworthy					
Easy To Clean, Wash Or Sterilize					
Sound Attracts					
Action Attracts					
Encourages Persistent Effort					
Can Be Used In Various Positions					
Adaptable For Simple Or Complete Movements					
Gives Satisfaction Of Achievement					
Encourages Speech					
Encourages Rhythm					

EDUCATIONAL MATERIALS FOR EARLY CHILDHOOD EDUCATION

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Materials selection is one of the last steps in the process of educational programming. Briefly, the process could be divided into six general steps:

1. Know the child (or group) with whom you are to work. An understanding of his characteristics should include both abilities and disabilities.

2. Consider the areas of educational concern. There are different methods of categorizing educational goals. These goals should include: motor skills, mobility or premobility skills, self-concept formation, communication skills, self-care and daily living skills, sensory development, and cognitive processes.

3. Outline the behavioral goals for each of the above educational concerns. These should be specific goals such as developing hand grasp or learning to identify parts of the body.

4. Program your educational procedures. These need to be detailed and sequential.

5. Locate and utilize materials and equipment.

6. Evaluate the entire procedure.

There is a wealth of materials available for use with the young blind child; many of these require little or no adaptation. Two materials listings prepared through the Instructional Materials Reference Center at the American Printing House for the Blind are:

1. "Commercially Available Instructional Materials for use in the Development of Elementary Readiness Skills in Young Visually Handicapped Students"

2. "Commercially Available Recorded Instructional Materials for the Development of Communication Skills"

The area in which there seems to be the greatest need for adapting or developing new materials, especially for multiply handicapped visually impaired children, is language development. At the elementary level, much of what is available in language materials is too visually oriented.

A number of guides which aid in the knowledge of materials used by visually handicapped students have been developed in recent years. "The Visually Impaired Child: Growth, Learning Development - Infancy to School Age" (APH 8-5104, 50¢) by Carol Halliday and "Toys for Early Development of the Young Blind Child" available through the Illinois IMC are examples of these.

Materials selection must be thought through very carefully. The following questions can be used as a guide in selecting instructional materials for young blind or multiple handicapped visually impaired children. The relevance and significance of each question will depend upon specific needs and purposes:

1. Is a multi-sensory approach emphasized? Is the development of the senses, preferably more than one sense modality, promoted?

2. Are the materials multi-purposive? Can they be adapted in a number of ways?

3. Is practicality stressed? Is there a focus on everyday situations and prevocational skills?

4. Is simplicity incorporated into the design? Are non-essential elements eliminated?

5. Are the materials highly motivating? Do they have built-in rewards? Do they use a high interest, low vocabulary approach?

6. Is the learning of basic skills and knowledge incorporated? Are these materials designed to help teach elementary concepts which may be accomplished by other children through incidental learning?

7. Are the materials structured for sequential learning? Are they programmed from the very simple to the more complex?

8. Is each item sturdy and durable? Can it be used by older children who function on very elementary levels?

9. Are these materials as safe as possible?

10. Do the materials deal more with concrete experiences than with abstract concepts? Is the child involved in learning by doing?

11. Do the materials focus on the development of communication and language? Is the area of listening skills development fostered?

12. Is independent functioning promoted?

13. Can the materials be used by parents?

14. Do the materials provide for repetition? Are they designed to present the same concept in a variety of ways?

15. Do the materials meet the needs of the older child? Are these items of particular value in the light of a limited quantity of instructional materials available for older multihandicapped visually impaired children functioning on an elementary level?

16. Do the materials aid in reaching the educational objectives outlined?

Instructional materials use can be greatly increased by taking time to brainstorm concerning new and creative ways to use items in addition to those uses which are readily apparent. A simple work-play tray could be used to teach directional concepts, textures, comparisons, and location, to name just a few concepts. All these would be in addition to its obvious purpose of facilitating activity and storage.

In summary, let me say that there are three questions regarding instructional materials that teachers face: (1) What is available? (2) How do I choose the best materials for my students? (3) How do I get the most use from the materials I have?

Finding answers to all three of these questions will greatly improve the educational program for visually handicapped children.

MOVEMENT EXPLORATION AND GYMNASTICS FOR VISUALLY HANDICAPPED CHILDREN

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A major problem encountered by many visually handicapped individuals is an inability to move freely in space. This restriction of movement is often considered to be the major disability with which the individual must learn to cope. Therefore, during the spring of 1971, a study was designed to test the effects of a gymnastics program on the orientation and mobility skills of young, visually handicapped children. It was hypothesized that the children who participated in a 5-week gymnastics program would have significantly superior orientation and mobility skills when compared with children who did not participate in the gymnastics program.

The subjects of this study were 30 students enrolled at the Texas School for the Blind, Austin, Texas. The children were homogeneous according to sex, age, and amount of vision (partially sighted or totally blind). One child of each matched pair was randomly assigned to a control group and one to an experimental group. A modification of the Orientation and Mobility Scale for Young Blind Children by Francis Lord was administered to the children. Following the pre-test, the experimental group participated in a 5-week program of gymnastics which consisted of activities in tumbling, trampoline, and balance beam.

The gymnastics program consisted of the traditional skills taught to children in each of the three activities. The children met with my staff and me for 45 minutes a day, five days a week. (Five undergraduate physical education majors from the University of Texas assisted with the program.) The children spent approximately 25 minutes working on tumbling skills, 10 minutes a day practicing on the balance beam, and five minutes every other day practicing on the trampoline. This short amount of trampoline time was unfortunate but necessary because the trampoline was too small to accommodate more than one child at a time, and no more than eight or nine children could practice in one class period. Formal lesson plans were not followed because it was felt that the children should be allowed to progress at their own rates. A total of 21 tumbling stunts were taught. These ranged from the simple log roll and forward roll to dives over rolled mats and head stands. Also included were several partner stunts such as the "Chinese get-up," "leap frog," and "squash pyramid." The children learned 12 stunts on the balance beam, such as stepping over a wand and walking on the heels. Nine stunts were learned on the trampoline. In addition to the basic stunts, most of the children learned to do a dogey drop to a front drop, and several learned to do forward flips. The control group did not receive the concentrated gymnastics program, but did participate in the regular physical education program.

The Modified Orientation and Mobility Scale used for this study consisted of six items. Item I measured the quickness and skill with which the child could navigate stairs. Item II measured the child's ability to judge the height of a bench, climb on a bench, and jump off without losing his balance. Items III and IV measured dynamic and static balance, respectively. The accuracy with which the child could orient himself by making 90 degree, 180 degree, and 360 degree turns was measured by Item V. Item VI measured the distance a child veered when trying to walk a straight line.

Analysis of post-test data revealed significant differences between the control and experimental groups on static balance and orientation as measured by the facing movements item. The control group was able to balance for a significantly longer time than was the experimental group (significant at the .05 level). The experimental group was significantly (beyond the .01 level) more accurate in facing movements than the control group. No explanation for the regression of the experimental group on the static balance item could be determined. The investigator could only suggest that the item was not an adequate measure of static balancing skill.

The gymnastics program was beneficial to the children in a number of ways. First, muscular strength was greatly improved. Children whose muscular development was so poor that they could not even get onto the trampoline or balance beam by themselves were able to do so by the end of the five weeks. Second, each child's confidence in himself greatly improved. Children who would cling to the wall when walking down stairs began to move down the stairs confidently and with no assistance. Those who were afraid to try new stunts finally developed an eagerness to try anything new. Third, statistical analysis of the data showed that, as a group, the children were able to orient themselves much better after the program than they were before it. I believe that the tumbling and trampoline activities were especially beneficial. To succeed, the child must know where each part of his body is in relation to the other parts, in relation to the tumbling mats or trampoline bed, or in relation to his partner. Both statistical analysis and observation of individual children indicate that a child who learns to orient himself when in the unusual gymnastics positions also learns to orient himself when in the normal upright position.

While I obtained some very encouraging results from the gymnastics program, there remained one very important question: What can a teacher do to help children who are not motorically ready for successful participation in tumbling and gymnastics? The answer, when I finally found it, was simple, and I began developing a program in "movement exploration." Movement exploration may be defined as a problem-solving approach to helping the child understand the use of his body in movement. The program has four main purposes: (1) to develop the motor skills necessary for participation in the sports-skills program which begins in the fourth-grade year, (2) to develop greater confidence in one's body and in one's ability to exercise some control over the environment, (3) to develop orientation skill, and (4) to develop an adequate body image, which includes not only the ability to name body parts but also the ability to know where the body is and what the individual can make his body do for him.

Before beginning a movement exploration program, the teacher must be sure that the children are able to name their body parts. Much of the program involves asking children to do various things with hands, knees, legs, etc. Time will be wasted if the teacher must stop to show each child the location of a particular body part.

The child begins the program by exploring his "personal space." Personal space is all the area within reaching distance of the fingers and toes. Ways of moving within this space are discovered. For instance, the child is asked to move one arm, then move the other arm, move one leg, move the other leg, and then finally move his head, keeping all these parts going at once. Or, he is asked to keep both hands on the floor and see how many ways he can move while in this position.

Next, space is extended somewhat and the child learns that space has an "up" and a "down" when he climbs on chairs or desks and jumps off them. He discovers that space has an "over" and an "under" by jumping over some objects and crawling under others.

As a child's confidence improves and he gains more knowledge about his body, he learns some simple tumbling stunts. He also begins experimenting with new heights by climbing to the top of a ladder or hanging by his knees from a bar placed high above the ground.

At this point in the program, most of the children are capable of handling a short amount of free time at the end of each class period. This is an excellent time for the teacher to become an observer of each child's progress.

After six to eight weeks of movement exploration, some children will be ready to experiment with more advanced gymnastics. Included is tumbling as well as balance beam and trampoline.

The final result of such a program is not the same for every child. Individual differences in body build, attitude, and interest must be considered. However, the child will have been given the opportunity to develop the confidence and physical ability needed to participate in the games and sports which he enjoys the most.

FEDERAL PROGRAMS AND THEIR IMPLICATIONS FOR THE VISUALLY HANDICAPPED

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As you know, it was originally planned that our Administrator, John Twiname, would speak to you. This is a particularly busy time for him, and therefore he could not be with you. I do want to bring you his greetings and tell you of his sincere interest in serving the blind and visually impaired and of his strong support for programs that will benefit them.

Vocational Rehabilitation is truly a State-Federal partnership, and therefore, our greatest effort and most of our half-billion dollar appropriation goes for supporting the basic programs in the States. The money is divided 80% Federal, 20% State. The State is responsible for provision of all services. These include, but are not limited to, physical restoration, diagnostic evaluation, counseling, rehabilitation adjustment services, pre-vocational training, vocational training, placement, and follow-up services. This is the vocational rehabilitation cycle.

It would be absolutely superfluous for most of you attending this convention to describe in detail any of the above mentioned services. You are familiar with them and in most instances provide a vital part of the continuum that ultimately leads to self-support or at the very least self-help and self-care.

The Act governing our administration provides service in many other areas that make it possible to carry out successfully the rehabilitation cycle noted above. For example, there are grants for the provision of services to States where such services are new to that State. The matching ratio here for the first three years is on the basis of 90/10. The Act also authorizes construction money for workshops and rehabilitation facilities and grants to help staff such facilities. Technical assistance is provided through a panel of experts to assess current needs and provide consultation regarding improvements.

In the same portion of the Act money is made available for stipends to trainees who may need to undergo extensive training in workshops or similar facilities along with a small appropriation for contracts with industry. These are designed to increase the interest of large and small companies in the employment of severely disabled persons. Of course, many of you are familiar with our regulations which permit third party funding, designed to develop cooperative arrangements with other State agencies, hospitals, schools, etc., in order to extend vocational rehabilitation services in State agencies other than those directly concerned with vocational rehabilitation. The only requirement here is that the personnel be under the supervision of the funding agency even though physically housed elsewhere. Through this arrangement the concept of vocational rehabilitation has been substantially expanded in a number of States. Alabama, located in this region, is a fine example of how third party funding can be utilized to expand the State program and, consequently, services to disabled citizens.

Thus far we have been talking about portions of the Act dealing with services that are client centered. In order to carry out successfully a truly meaningful program to the handicapped of this country, it is essential not only to make services available to them, but to design mechanisms that will provide training for the specialized personnel needed in the program.

Research, Demonstration, and Training have been integral parts of our vocational rehabilitation program since the amendments to our Act of 1954. These revisions made it possible for us to inaugurate and maintain long-term training programs in medicine, psychology, social work, rehabilitation counseling, mobility instruction, rehabilitation teacher training, placement training for counselors working with the blind as well as many other disciplines. Through these grants, we are able to provide initial support for faculty as well as stipends for interested students.

A portion of the training money is set aside for short-term training programs, workshops and special training courses, usually a week or less in duration. Such programs acquaint employed personnel with new techniques in the field and afford an opportunity for the exchange of ideas among professionals. The short-term training concept also permits the bringing together of experts in various fields to discuss new or expanded employment opportunities (in our case for the blind and severely visually impaired) and to develop guidelines and methods for opening new areas of vocational opportunity. Short-term training grants may be given to universities or non-profit organizations or agencies interested in the conduct of such training. The somewhat phenomenal growth of our program in the past 18 years would not have been possible without basic support from our research and demonstration programs. A great deal of money has been spent since the Act was broadened in 1954 to develop hardware, study and implement new teaching techniques, and to evaluate sociological change with respect to the effect of society on the blind and visually impaired and how positive attitudes can be cultivated and negative behavior modified.

The demonstration aspect of our program has had a profound effect on expanding services and introducing new techniques. Two fine examples of how demonstration money was used during the past decade and a half will suffice to illustrate my point. Although mobility training for the blind had proven its worth and had been demonstrated successfully at veterans centers and at our vocational rehabilitation facilities, it was still necessary to provide the initial support in a number of instances to encourage communities, including some residential schools for the blind, to provide full-time training. The second illustration was the establishment and initial support of optical aids clinics, of which 35 were developed over a ten-year period.

To round out our research and demonstration picture, I should like to include a brief comment concerning our International Division. Using excess currency generated by our Public Law 480 funds, we have for the past several years taken responsibility for the initiation of model rehabilitation programs in developing nations. The goals of the programs are simple. They are to introduce and to expand rehabilitation services to disabled persons wherever excess currencies are available to do so, and through these demonstrations to gain knowledge that is applicable here in the United States. These missions are being accomplished. In addition, we are gaining tremendous propaganda benefits that would not be possible in any other way. I am sure that you would agree that rehabilitation is the most positive way to extend goodwill and understanding to our world neighbors.

So much for vocational rehabilitation within the meaning of the

Act. The question remains, however, how has it been meaningful to blind and severely visually impaired citizens. Let me give you a few facts that are not highly publicized but will provide a measure of progress.

Of the estimated 437 thousand blind persons in the U. S. today, 105 thousand have been rehabilitated in accordance with our definition. 65,000 were rehabilitated into gainful employment. The remaining 40,000 were trained as housewives or unpaid family workers. Of the 65,000, 520 are employed as teachers of sighted children, 550 as computer programmers, 2,100 as medical transcribers. The remainder are in professional, managerial, clerical and sales, industrial (skilled, semi-skilled, unskilled), and sheltered workshop employment. The figures quoted above do not include the severely visually limited who have been rehabilitated but are not considered "legally blind."

On one hand this might be considered a rather impressive record. It is also a fact, however, that we have merely scratched the surface and with the rapidly changing economy, advance of technology, and continuous rearrangement of human resource priorities, we could easily suffer severe setbacks unless we redouble our efforts.

How do we in the vocational rehabilitation administration view the future? One measure of course is a current assessment of blind persons in training. At present, there are more than 3,000 blind persons attending colleges and universities. 2,500 are enrolled in commercial courses in business colleges, 2,000 are receiving training on the job or in specific trade schools. The statistic, however, that is of greatest interest to all of us is the 8,500 blind students now attending junior and senior high schools. Although we have always had excellent cooperation with both residential and public schools, much closer teamwork will be necessary to assure success for these young people. It is no longer a matter of lack of training facilities or opportunity, but the great need is for careful planning in order to fit into an increasingly complicated society. It is important to guide the student into a field which fits his abilities, is satisfying for him, and will have lasting benefits, rather than encouraging the youngster to follow the glamour trail. In spite of great social and economic changes which are occurring now and will continue in the future, opportunities will always be available for the well-trained blind or severely visually impaired person. However, we must train him in skills that will be needed tomorrow if we are to face up to reality and help the student do likewise. Such reality may be illustrated by the fact that second best can earn a silver medal in school competition but won't earn bread in the world of work.

Thanks for letting me share some ideas with you. I hope that the sharing we had this morning and which was manifested at the conference can be expanded so we can build the strong bridges that are needed in all communities if we are to do the job expected of us by those we serve.

A DELIVERY OF COMPREHENSIVE SERVICES TO DEAF-BLIND CHILDREN AND THEIR FAMILIES THROUGH THE REGIONAL STRUCTURE

Dan Burns, Coordinator

Mid-Atlantic Regional Center for Deaf-Blind Children
Raleigh, North Carolina

There has been misunderstanding nationally regarding the term "deaf-blind." A review of the term now might be helpful. Under the provisions of P.L. 91-230, the Education of the Handicapped Act, services are offered *to children who have both auditory and visual impairments, the combination of which causes such severe communication and other developmental and educational problems that they cannot be accommodated in such education programs either for the hearing handicapped or for the visually handicapped child.*

Under the program of the National Center for Deaf-Blind Youths and Adults, services are offered *to youths and adults who have both substantial visual and hearing losses such that the combination of the two causes extreme difficulty in learning.*

The rubella epidemic of 1964-65 swept across this nation leaving an estimated 20,000 children with one or a combination of the following handicaps: Cataracts, heart malformations, hearing defects, mental retardation and brain damage. In addition to this group, another 20,000 pregnancies were terminated in miscarriage or stillbirth.

We estimate that there are 4,600 children who can be termed deaf-blind as a result of the 1964-65 rubella epidemic. In the Mid-Atlantic Region alone we have identified 406 deaf-blind children.

Two Programs for the Deaf-Blind in the United States, Guam, Puerto Rico and the Virgin Islands:

Two programs serve deaf-blind persons in the United States, Guam, Puerto Rico and the Virgin Islands. One is for children and the other for youths and adults. The program for children is administered by the Bureau of Education for the Handicapped, the U. S. Office of Education. Under an agreement with the Social and Rehabilitation Administration, The National Center for Deaf-Blind Youth and Adults serves deaf-blind youth and adults.

Centers and Services for Deaf-Blind Children

Ten Regional Centers for Deaf-Blind Children, each headed by a regional coordinator, provide services for from five to seven states. These regions do not follow the boundaries of HEW regions, but represent a group of states that voluntarily agreed to form a region. One agency in each region agreed to take the responsibility for coordinating services and programs in the region. In some regions a state agency has the administrative responsibility and in others a private institution or agency is the administrating body.

Each center is responsible for establishing a register of deaf-blind children. From this information grows the programs and services which provide direct services to deaf-blind children, their families, and personnel working with them.

While understandably each region is unique because of differences in geography, population and services available, they offer to some degree the following services:

1. Evaluation and diagnosis
2. Residential programs
3. Day school programs
4. Home teaching
5. Parental guidance
6. In-service training
7. Respite care
8. Transportation
9. Coordinating of agencies

10. Research and sociological studies
11. Local, state, regional and national workshops
12. Survey and analyses of legislation and recommendations and support for new legislation
13. Coordination of colleges and universities to provide education for personnel working with deaf-blind children and their families and for parents
14. Information and referral services
15. Cooperation with colleges and universities in providing summer courses and short term courses for teachers, aides and parents
16. Summer programs for deaf-blind children and their families
17. Formation of and cooperation with parent groups
18. Public information
19. Locating and obtaining additional funds, i.e., Title VI-B, Occupational Education, Traineeship Grants, Private Sources
20. Cooperation with institutions to provide practicum for students
21. Recruitment of personnel
22. Maintaining a registry of deaf-blind children
23. Registry of agencies responsible for services to deaf-blind children and their families
24. Cooperation with National Center for Deaf-Blind Youths and Adults
25. Cooperation with all agencies that serve deaf-blind children

The National Center for Deaf-Blind Youths and Adults

The 1967 amendments to the Vocational Rehabilitation Act authorized the creation of the National Center for Deaf-Blind Youths and Adults. The Center serves any deaf-blind person who is 21 years of age and younger persons who have made the fullest possible use of educational opportunities available to them and who might benefit from rehabilitation or habilitation.

The National Center was established over two years ago and is operated by the Industrial Home for the Blind, Long Island, New York. Its purposes are:

1. To provide rehabilitation or habilitation training for deaf-blind youths and adults based on their needs, interests and capacities.

2. To conduct research designed to minimize the handicapping effects of deafness and blindness.

3. To provide professional and technical training for personnel working with deaf-blind youths and adults.

4. To provide public information that will lead to the understanding of deaf-blindness.

Presently the Center is housed in temporary facilities, but will move to a specially designed, permanent headquarters on Long Island in about two years. This will allow for a major expansion of services. The National Center now operates three regional offices in Atlanta, Georgia; Chicago, Illinois; and Glendale, California. There are plans to increase the number of regional offices in the near future.

The staff of the regional offices assists state and local agencies in serving deaf-blind persons in their home communities when possible, and makes referrals to the National Center for a rehabilitation and training program when indicated.

Conclusion:

The Regional Centers for Deaf-Blind Children and the National Center for Deaf-Blind Youths and Adults are cooperating in an effort to provide an uninterrupted continuum of special education and rehabilitation program for deaf-blind children, youths and adults. Together they seek the cooperation of all individuals and agencies serving this population.

DIAGNOSTIC SERVICES AND PROGRAMMING FOR DEAF-BLIND CHILDREN

York Hudgins

Director, Georgia Center for the Multi-Handicapped &
Consultant, Visually Impaired, DeKalb County Board of Education
Atlanta, Georgia

Picture for yourself a little girl, named Sherry, very typical in appearance and in physical, neurological, and mental abnormalities of rubella syndrome children. She is now 7 years 2 months old. Her appearance has not changed significantly in the last year and 10 months. She has gained some weight and made developmental gains. She and her parents have a lifetime of problems, but these don't appear as unsurmountable as they did 2-3 years ago. The main thing going for her now and some 80-90 children in Georgia very similar to her is that she has someone besides her parents concerned and providing support to see that she makes maximal progress. Three years ago, she would have been relegated to a state institution for *custodial* care, likely for the remainder of her life. Today she is in the deaf-blind developmental training-educational program at the Georgia Academy for the Blind.

Sherry's management, developmental, and subsequent training or educational problems can be attributed to rubella in utero or maternal rubella. The epidemic of 1964-65 produced approximately 30,000 rubella syndrome children. Another 20,000 were stillbirths or died in early infancy. Medical science has determined that virtually every organ may be affected by congenital rubella with the most typical anomalies being deafness (in varying degrees), congenital heart disease, blindness (in varying degrees), and mental retardation, again in varying degrees. A rubella syndrome child might have any one or a combination of these conditions.

I remember quite vividly, as many of you do, our biennial convention in Toronto, Canada, in 1968, when Dr. Louis Cooper presented a most effective slide presentation and gave a very frank and factual discussion of the medical and educational implications for rubella syndrome children. At that time, I think I breathed a sigh of relief that my "bag" was the education of blind children, and not involvement with these pathetic creatures. I didn't dream that a short year and one half later, I would be devoting my full professional energies to their welfare.

In December, 1969, I accepted the challenge of developing a comprehensive diagnostic evaluation center for deaf-blind children in Georgia. This program has become a reality beyond my greatest expectations. We provide the comprehensive work-up that is needed to determine how a severely involved multihandicapped child is functioning, but we go far beyond the diagnosis and recommendation. One of the unique aspects of our program is the follow-through we are able to provide for the children and their parents. If we bring children in for a two to six weeks educational, psychological and medical evaluation, and the child returns home to regress to a former state, then we have done nothing. If the final report goes to a community agency where it's scanned and filed away, then we have done little more than spend the citizens' money. *But* we have *done something* worthwhile when a child, after evaluation, is placed in a program which meets his immediate developmental or educational needs.

Now back to Sherry. Like a large percentage of rubella syndrome children, she came to our center quite emaciated. Upon entrance she weighed 24 pounds. At the time of her discharge, almost two months later, she still weighed 24 pounds. The mean weight for a 5 year old female is 42 pounds. This 18 pound difference is quite significant for a five year old. Her arms and legs, as her entire body, were quite spindly and frail. She was a listless child without apparent strength and energy for active involvement with peers or the environment. In her developmental history there were definite periods of apparent lack of appetite and generally a failure to thrive.

Sherry was not weaned from the bottle; she was consuming regular table foods which had been blenderized and which she took from the bottle. She could not eat solids as she had difficulty swallowing and she would not chew. These characteristics, the failure to thrive and difficulty swallowing and chewing, also are typical of many rubella syndrome children.

Sherry had a cardiac problem diagnosed as patent ductus arteriosus. This presented no problem from a training and educational standpoint.

Sherry had bilateral congenital cataracts, postoperative. Even after the operations there continued to be a clouding of both pupils. Glasses were not prescribed to replace the removed lenses because, in her case, she was functioning at such a low developmental level that she could not wear them appropriately.

She demonstrated no functional hearing. Whether or not this was due to a profound bilateral hearing loss or whether her problem was a central nervous system disorder was not easy to determine. She could not be conditioned to respond to auditory stimulation in a traditional manner. It was necessary for the audiologist to look for reflex action and startle responses. For all practical purposes, however, she functioned as a profoundly deaf child. Naturally, she had no meaningful communication system beyond laughing and crying.

Sherry was not toilet trained and showed no discomfort when soiled. She, unlike many rubella children we see, had some ambulation. This was by crawling and sliding across the floor. She could not walk, and initially could not support her weight without assistance.

Other more involved children have had absolutely no ambulation and cannot muster sufficient strength to even sit without support. Some have demonstrated bizarre ambulation through surpine crawling, i.e., scooting across the floor on their backs.

Some were constant light gazers and appeared to derive their greatest satisfaction from flicking their fingers directly in front of their eyes and engaging in other perseverative mannerisms for self-stimulation.

I believe it goes without saying that many of these children were functioning at a level of severe to profound mental retardation.

Although Sherry was quite delayed physically as well as developmentally, our consultants and staff saw enough developmental gains to provide us with what I believe is some realistic hope. While in the program she began relating to objects and people in a meaningful way and her attention span increased. She made improvement in ambulation to the extent that she could walk for long periods while holding someone's hand. She progressed from blenderized foods to some table foods and could assist with spoon feeding. She learned to drink from a cup.

Sherry's placement is appropriate for her for the present. She might never make sufficient educational gains to justify a long-term educational program, and one day, she might be placed in a state institution. Even if this is the case, the time, energy, and money expended in her behalf will have been well spent. As a result of early diagnosis and training, she will be ambulatory, she will be a self-feeder, and she will be able to care for her own personal needs, and she will have developed the basis for a communication system. I predict she will make even more progress than this. It is still much too early to rule out the possibility that she will make sufficient progress to become a contributing member of society.

As I stated earlier, our program began operation in late 1969. By June, 1971, we felt we had worked with and programmed for most of the severely involved rubella deaf-blind children. At that time we altered the criteria for acceptance into our program to include children 12 years of age or younger who have a major sensory deficit, that is, deafness or blindness, in combination with other handicapping conditions. But even at this time, we infrequently learn of, and work with, a deaf-blind child who is a product of the epidemic of 1964-65.

Our diagnostic program is available at no cost to children of our state due to the fact that our most substantial funding comes from Federal sources. Our center's operation is a joint endeavor of the DeKalb County, Georgia, School System; Elks Aidmore Hospital, which is a convalescent and rehabilitation hospital; the Department of Special Education, Georgia State Department of Education; and the Southeast Regional Center for Deaf-Blind Children.

I might add at this point, and I don't hesitate doing it since this is a convention of educators and others concerned with the welfare of the blind, you are doing a heck of a lot more for your multi-handicapped population than many others working in the field of special education. I believe most of us (and I include myself with you) are subscribing to the philosophy of serving children - all children - rather than handicapping conditions.

Let me say in closing that we have been fortunate in bringing together quite a team of educational, psychological, medical, and social service professionals in order to accomplish our major goals - these being the identification of the population; providing medical, psychological, and educational diagnosis; parental counseling; and appropriate placement of children served.

DEVELOPING A VOCATIONAL PROGRAM IN A RESIDENTIAL SCHOOL FOR THE BLIND

D. Gary Coker, Principal

Tennessee School for the Blind
Donelson, Tennessee

There is one purpose for vocational education and that is turning out graduates who can perform effectively on a job. You can have the most elaborate curriculum, the most dynamic instructor and go through all the motions of teaching but if the students can't perform on the job, the program is a failure.

One of the first developmental steps for a school is to decide what approach to vocational education it will take: (1) provide technical training so that students have a salable skill; (2) provide work experience background so he can improve his skill through further practice; (3) or a combination of skills and experience. What is best for one school is not necessarily good for all.

In Tennessee, we choose to take both approaches. In the area of technical training, we offer office occupations which consists of five years of typing, two years of bookkeeping, filing and general office work, and one year of general business. In industrial arts, we offer two years of advanced work in radio electronics, metals, and woodworking; and four years of piano tuning. These courses are designed to allow the student to go from the classroom to on-the-job training.

The second phase of our program is work experience. Juniors, seniors, and special students may attend regular classes in the morning and work in the afternoon. This program is designed to allow the student to work a minimum of 15 hours a week. In all instances, placement has been off campus with normal working conditions.

I want to share with you some of the successes and failures involved in developing the two areas I have mentioned. I think of any curriculum program in three phases: (1) preparation, (2) development, (3) improvement. In the preparation phases (after you have the money) you set up course objectives. In skill areas, these objectives are based on task analysis. In work experience these objectives are based on general knowledge, applications, resumes, interviews, employee relations, etc. Your objectives should be stated with behavioral outcomes, i.e., what kind of things should the student be able to do at the end of a course. Even for students enrolled in a work experience program, it is important to have at least one class period a day with the teacher.

Another thing to be considered in your preparation is who is going to be allowed to enter the course. What about pre-requisites, course work, age, academic achievement, etc. The fewer the restrictions, the larger the number and the greater the need for individualized instruction. In skilled areas, there are definite pre-requisites. For example, we suggest that for office occupations, the student should have successfully concluded two full years of typing and general business. To enroll in industrial arts, a sequence beginning with general industrial arts to the third year of specialization is required. Pre-requisites for work experience are limited to basics that deal with work laws such as age, etc. We do not set up academic achievement as a pre-requisite. This allows the student who may be having difficulty in the academics to be successful in cooperative education. We have found that the local Junior Achievement organization provides an excellent pre-requisite for students in cooperative education.

Once you have completed the preparational phase, you develop the curriculum. Here you outline instructional units in terms of specific tasks. At the end of each unit, the student should be able to do something that he couldn't do before.

It is important that during the development process, a job-oriented point of view is adopted. This keeps the subject matter relevant.

During the development stages, determine job availability and do task analysis. Locate employers and make a job analysis of what is required, its importance, its learning difficulty. Then match the student and the job. Forget numbers! Don't place students for the sake of placement.

The task analysis helps the teacher to individualize instruction and avoids a lot of irrelevant content.

The development of a program must include various types of performance or instructional procedures for reaching your objectives. Here we see a great deal of diversification, but all moving toward the same objective. Some will use simulated work experience that may be sub-contracted and is done on campus. Others may have on-campus jobs or controlled workshops. The approach must be determined by the population with which you are working. These approaches are what I call instructional procedures. But our success is still determined by the student who is gainfully employed.

The third phase of developing a program is what I call improvement. A course should be as up to date as a morning newspaper. This phase is probably the simplest to check but one of the most critical. All too often we have a student on the job and feel we have completed our task. There are two important aspects in this phase. The first involves checking student performance against the objectives and secondly, checking the objectives against the job. When a student is enrolled in classes, evaluation techniques are readily available. However, after he leaves, continue to check on his progress. Call him on the phone, send a questionnaire, talk with his supervisor. Go back to your job analysis and ask specific questions. To answer the question "how's he doing" doesn't require much analysis.

In Tennessee this past year, we had the following breakdown of placements:

Total wages earned by all students	$2,621.40
Total hours worked by all students	2,291
Total students placed for work experience and diagnostic evaluation	18
Placements	
Child care aides	5
Restaurant food service	9
Piano tuning	2
Transcriptionists	2
Highest wage/hour earned at end of year	1.95
Lowest wage/hour earned at end of year	1.60
Students enrolled in permanent vocational work experience - average wage earned	1.70

We also had four students that were not employed. We have had three to be dismissed.

In summary, I would like to say that vocational education is not a panacea but it does offer a great deal of opportunity for students if well planned. In small schools, it will cause schedule difficulties, especially in residential schools who have athletic and music programs occurring in the afternoons. Let's explore job opportunities that are not traditionally thought of in the area for employment of the visually handicapped. We know students can be successful in vending stands, piano tuning, etc. Let's get out and do some job analysis, set up curricula with objectives based on these analyses and use whatever instructional methods necessary to get the student on the job. Don't bore the student in the classroom with irrelevant facts. After you've done all these things, smile, work and pray, and I'm sure the program will be successful.

"GIVE A MAN A FISH AND HE CAN EAT FOR A DAY. TEACH HIM HOW TO FISH AND HE CAN EAT FOR THE REST OF HIS DAYS."

Isaac D. Clayton, Coordinator
Work-Study & Work-Experience Programs

Maryland School for the Blind
Baltimore, Maryland

In any local economy, new industries emerge; some grow, others die. As a result, the occupational composition and skill requirements of the work force change through the years and past manpower needs are an uncertain guide to future requirements. Extensive projections of these changing manpower requirements are needed to ensure proper planning of vocational education programs and training facilities.

No single acceptable methodology exists to predict employment needs by occupation. Some of the principal methods used are employer surveys, job opening data, and industrial employment trends.

Already existing studies did not provide concrete evidence that could serve as a total basis for developing Vocational Education Program projects appropriate for the blind and partially-sighted. Therefore, from March 1 through August 31, 1972, under a grant from the Maryland Department of Education, Division of Vocational and Technical Education, the Maryland School for the Blind is conducting a survey to: (1) determine occupational opportunities for the blind and partially-sighted in the State of Maryland, (2) determine the employment history and present job placement of visually impaired adults who attended the Maryland School for the Blind from 1951 through 1971, and (3) develop a pilot Vocational Education Program in accordance with the findings in "1" and "2" above.

The content of this paper should be assessed in the light of the history and current status of vocational education curricula in schools for the blind at the national and local level.

In an effort to ascertain the current trend in industrial arts and vocational education programs in residential schools for the blind, the writer developed a questionnaire seeking information regarding said programs; the questionnaire was sent to the 44 residential schools in the United States.

Tables 1 and 2 on the following pages attest to the sobering state of our pre-vocational and vocational programs in terms of truly preparing the visually impaired student for the world of work.

Over the years, vocational and technical education has increased on a very limited scale in schools for blind children, as compared with quite extensive development in the public schools. The range and quality of opportunities in vocational education programs for the blind has not kept pace in curricula or physical facilities. It is reasonable to assume this lack is due to reliance upon the post-graduate experiences which students have under the auspices of public agencies charged with this responsibility. The opportunity of receiving post-graduate training or schooling, however, seems to be available only to a select few. Generally, those blind students with a higher capacity for learning (20% to 40%) are the ones who do, and rightfully so, receive the bulk of advanced education and training. However, this is serving the needs of the minority, and it is time that educators of the blind also serve the dire needs of the less able majority through realistic vocational education programs that will provide visually impaired children opportunities for training and employment in suitable and satisfying occupations.

Many educators of the blind have recently shown an upsurge of interest in the less intellectually endowed majority of their school enrollment because of (1) the growing belief that everyone is entitled to use his abilities--whatever they may be--in a productive way, and (2) the cost of dependency as compared with self-sufficiency.

Too often, vocational educational programs in schools for the blind have been predicated upon an already established and saturated labor market; we have been remiss in exploring new avenues of occupational training and placement.

The problem is four-fold: (1) Planning and making occupational projections as identified by the various labor market projection methods, (2) establishing appropriate vocational education facilities for blind school age children, (3) developing realistic vocational education programs for blind children that will

TABLE I

School No.	Enrollment	Pre-Voc. & I Program		Maximum Participants	College Bound
		M	F		
1	181	33	21	60	25%
2					
3	174	15	12	40	60%
4	140	8	8	?	33%
5	86	4	8		55%
6	140	20	18	0	33-1/3%
7	207	70	50	150	20%
8	185	26	3	45	25%
9	31	9	7		
10	43	0	0	0	0
11	165	60	30	100	50%
12	112	23	6	40	20%
13	85	22	-	30	40%
14	133	35	5	42	40%
15	122	35	10	60	10%
16	110	20	3	45	60%
17	277	11	24	277	50%
18					
19	277	89	63	177	23%
20	79	23	22	59	0
21	90	20		35	20%
22	198	28	0	35	50%
23	168	12	12	-	5%
24	186	55	40	100	65%
25					
26					
27					
28	163	27	24	31	75%
29	342	102	77	200	31%
30	33	6	0	33	
31	171	56	46	109	25.3%
32	124	36	27	63	35%
33					
34	260	40	10	60	30%
35	195	-	-	?	20%
36	165	46	37	83	Unknown
37	43	12	-	12	10%
38	185	54	24	120	65%
39	266	75	20	130	40%
40	67	8	11	19	0
41	104	27	11	52	30%
42	133	36	33	69	40%
43	135	28	20	100	40%
44	110	33	33	170	45%
45	153	45	40	100	55%
Total	5838	1249 (21%)	755 (12%)	2646	

TABLE II

School No.	Specific Occupation	Salable Skills	Hobby	Limited Skill Development	Attend Local Voc. Tech	Exploratory
1	X		X	X	9	
2		X		X	0	X
3	X	X	X	X	0	X
4		X			9	X
5		X	X		1	X
6		X		X	0	
7		X		X	10	X
8						
9			X		0	
10			X		0	X
11						
12						
13				X	0	
14						
15						
16				X		X
17	X	X	X	X		X
18	X		X	X	0	X
19						
20						X
21	X		X	X	0	X
22		X		X	0	X
23						
24		X		X		X
25		X		X	0	X
26			X	X		X
27		X	X	X	0	X
28			X	X		X
29						
30		X		X	6	
31						
32						
33						
34		X			0	X
35	X	X		X	0	X
36		X		X	0	X
37						
38		X				X
39	X	X	X	X	-	X
40		X	X	X	-	X
41	X	X		X	110	X
42		X	X	X	0	X
43						
44						X
45	X	X	X	X	0	
Total	9	21	15	24	145	26

better equip them for employment in today's and tomorrow's competitive and/or sheltered labor market, and (4) diminishing the existing pre-vocational gap between the school and other agencies charged with post-school training and eventual placement.

Recent surveys at the Maryland School for the Blind and other schools for the blind (Dauwalder, D. D., Education Training and Employment of the Blind, 1964, p. 68) indicate the need for effecting complete vocational education programs and developing the necessary physical facilities for their implementation. The statistics indicate that 60% to 80% of the students are not endowed with college ability. This, coupled with the growing number of multiple-handicapped blind children reaching school age each year (currently more than one-third of the enrollment at the Maryland School for the Blind fall into this category), vividly outlines the magnitude of the problem.

DESCRIPTION OF ACTIVITIES

1. A questionnaire will be sent to 2,000 selected employers in the State of Maryland.

   The questionnaire will be validated by personal interviews with a randomized selection of the respondents, both positive and negative, and will be tabulated by areas to provide the data for correlation purposes.

   Further validation will be provided by relating results of this survey with information available from Maryland State Departments of Employment Security.

2. A questionnaire will be sent to former students who attended the Maryland School for the Blind from 1951 through 1971 and followed up with personal interviews where necessary.

3. Appropriate statistical analysis of the data will be performed to test the null hypotheses stated above.

4. Educational curricula will be designed for Pilot Vocational Education Programs as indicated by the results of steps 1 through 3.

USE TO BE MADE OF FINDINGS

1. The results of this study will be used to establish realistic

and meaningful vocational education curricula at the Maryland School for the Blind based on the salable skills which need to be developed to meet the requirements of the current and projected labor market.

2. The results will be disseminated and published in order to provide other vocational education programs for the blind with the occupational information, most of which is *not* available from any other source.

3. Although this study is limited by design to the Maryland School for the Blind, it will have considerable applicability to other metropolitan areas and will indicate the methods by which similar surveys could be developed.

4. The results of this study will have general educational significance; as a method for relating particular vocational education problems to occupational opportunities.

5. The results will be used in making appropriate changes in the existing Maryland School for the Blind vocational program.

GUIDANCE: FOR WHOM? FOR WHAT? BY WHOM? HOW?

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There is a story told about a woman who entered the hospital. She needed an appendectomy; she got a hysterectomy; but what she really wanted was a facelift. The story undoubtedly illustrates the status of many recipients of guidance and rehabilitation services today. Many get what they don't really need; others get what they don't want; still others don't want what they really need and may or may not get.

This is an age of accountability for the delivery of services. The delivery system must demonstrate that its services are needed and wanted by the recipients and furthermore, that the services rendered are effective within stated goals and objectives. Ongoing evaluation of the entire delivery system is essential to arrive at this determination. Within this context, therefore, it may be well to review school guidance services from the point of view of for whom are services offered, to what end, who should render them, and how should they be delivered.

It goes without saying that most guidance personnel would agree that their services are and should be given in appropriate quality and quantity to students. This is an ideal that is probably far from reality. Wilhelmi (1970) found in his study that blind subjects with a higher level of intelligence received the greater amount of money and the greater degree of counseling during their rehabilitation. As a matter of fact, for his lowest group, subjects with a measured I.Q. 50 to 84, there was a negative correlation between degree of counseling and all three criterion variables which he used for determining vocational success, namely, income earned, percentage of time worked since completing school, and socio-economic status. The negative correlation with earned income was significant at the .05 level. For the total population he used in his study there was almost no relationship between counseling and any of the criterion variables used for vocational success. When the amount of money spent on a client was used as a measure related to degree of counseling, it was found to be a significant predictor variable only for his second group of subjects, that is, those with measured I.Q.s between 84 and 100.

It is always difficult to generalize from research completed on one group to a total population. However, some of these findings raise some interesting questions. Do counselors tend to spend their time, financial resources and energy on the upper intellectual group who may not really need their services in order to succeed? Are counselors giving the wrong kind of service to the clients who have a lower level of intelligence, so that such counseling may actually interfere with the rehabilitation process? Are clients across the board given the same "treatment" when in reality there should be some differentiation and variation of counseling?

If we are to attain the objective of giving service to all, we need to develop a variety of delivery systems in order that each is given what he needs to the degree that he needs it. The same mixture of services may not be appropriate for all in equal measure.

Changing societal conditions raise many questions regarding the purposes of counseling, that is, to what vocational goals are we directing students. It was estimated some years ago that the average person changes occupations at least three times during his working life. This figure probably needs to be revised upward in the light of the increasing number of occupations that are becoming obsolete. An illustration from our own field lies in the excitement and flurry with which blind persons were steered into computer programming. Now, a few years later, some are having difficulty getting jobs and the future of the occupation is presently in doubt. For whatever field we are guiding young persons to consider as a vocational possibility, we, as well as they, need to understand that the possibility exists that they may not be able to pursue that career for their entire working life. This calls into question the practice of training for specific jobs. It is undoubtedly questionable to direct efforts in a specific direction; instead, emphasis should be placed on broad general training that may transfer to the specific.

It is estimated that there are presently approximately 3000 visually handicapped students in colleges and universities across the country. With the changing job market and the impossibility of many current college graduates to obtain employment commensurate with their level of training, one wonders what kind of guidance and counseling these 3000 students have had or are getting. Naturally, one may ask the same question regarding the thousands of normal young people who are in college too. But the question becomes somewhat more critical when dealing with a handicapped population. In times past, the handicapped person and those from minority groups needed more training in order to get a job. This generalization may not be appropriate at the present time when employers are looking for those with lesser training so that they do not need to pay them on a higher salary level. Our studies (Scholl et al., 1969; Bast, 1971; Wilhelmi, 1970) all found that under-employment relative to training is a common characteristic of the employed population among the blind. Indeed Wilhelmi (1970) found that with brighter subjects additional training did not contribute to greater success as measured by his criterion variables.

At least two questions come to mind regarding this aspect of guidance. Will anyone in the future be able to obtain *the* job he wants? Will everyone be able to get a job? Several years ago I raised the question of whether it is realistic for us to prepare our handicapped population to look forward to job placement. It would seem from a review of present societal conditions that employment may not be a feasible objective for our entire population whether they are handicapped or not. If this be true or possible, then the emphasis in educational programs must change in order to prepare students for satisfying and productive living in an unemployed setting. In addition, the question of obtaining a job commensurate with abilities arises. It may be more reasonable to emphasize in educational programs those aspects of education which will broaden life's experiences apart from the job. In such an instance, individuals should receive help in identifying activities which will make life away from the job meaningful and interesting to compensate for the eight hours spent on the job that are routine and dull. There still seems to be a shortage of workers in the technical and service occupations. However, many of these are routine and not challenging in and of themselves. Perhaps job training should include instruction on how to survive a dull job by having an interesting life away from the job. All of these observations would seem to suggest that satisfaction of doing a job well and/or devoting one's entire life to a particular job is outmoded. These may be questions and issues which should be discussed and well thought through as we are planning educational programs for the future.

Many of the foregoing issues are related to the question of who should be doing the counseling. Bast (1971) found that when interagency cooperation was instituted, successful placement of clients was achieved even when all factors, including potential of the clients, seemed to point in the direction of lack of success. Is the task of guidance and counseling too large to be performed by any one person within the educational setting? It is possible that those engaged in such an activity within a specific school may be setting their sights on too narrow a range of occupational choices due, not to their own inadequacy, but to the impossibility of knowing about everything in this day and age. In addition, perhaps some are setting goals too high for some students and too low for others so that reality is not taken into account. In reviewing records for our study (Scholl et al., 1969) we found for some clients an unusual number of case closures followed by reopenings within a short period of time. In addition, many clients were placed in one training program after another, usually totally unrelated to each other. This may indicate a tendency to recommend a training program at a particular moment that seems to look good without giving thought to whether this really meets the needs of the client or whether he really wants that kind of training. Certainly, the recent experience in computer programming would support this possibility. It is necessary to be reality-based and at the same time mindful of the needs and capacities of clients.

The success of any one individual is dependent upon the efforts of numerous professionals working in a team approach in helping him solve his problems. The time has passed when a guidance counselor can work in isolation in a school setting without also taking into account the contributions which teachers, houseparents, parents, and other agency personnel may make in order to assist the visually handicapped student. In addition, the knowledges and skills of other professionals are needed. Current study and assessment of what is going on in the world of business and industry are also absolutely essential.

We turn now to the "how." Studies in work for the blind (Bast, 1971; Scholl et al., 1969), as well as those in other fields, stress the importance of self-concept in success, whether this be academic or vocational. This implies that there must be an assessment of personality characteristics and an intervention program undertaken very early in the child's life, beginning with parent education during the pre-school years. Many experiences in the "real" world must also be provided since contact with the normal is essential in order to arrive at a realistic appraisal of one's own abilities. Bast (1971) found that his employed group had the following personality characteristics: more permissive, accepting, open-minded, less authoritarian and self-centered. He suggests that certain personality traits may contribute to vocational success to a greater degree than overall "good adjustment." The blind beggar as described by Scott (1969) may be well adjusted but may lack the necessary personality characteristics in order to be successfully employed, according to our definition. More specific personality assessment and programs of intervention should be utilized in preparing students for potential employment.

An important aspect of the "how" must also include attention to the increasing need for the team approach. Compartmentalizing certain functions within a school or within a delivery system, which includes schools and various social agencies, cannot meet an objective of working together on the common objective. School and agency personnel must be in constant communication if this objective is to be reached.

Another important aspect of the "how" is the increasing necessity of involving the student as well as his parents, when appropriate, in the total process. The age of decision-making apart from the person involved is over as, increasingly, individuals are demanding that they be heard and be involved in the process. When this comes about, there will be different practices in record-keeping as well as different procedures for evaluation.

Finally, as accountability is emphasized, an appropriate method for measuring outcomes must be developed. A case closure followed by a reopening a year or two later is not a success. Perhaps what is needed is a continuing system of follow-up that includes retraining when and as necessary throughout an individual's working life.

In closing, we might return to the beginning story and apply its principles to what should be done with regard to the delivery of guidance services. Efforts should be directed toward helping students know what they want by continuing exposure to reality. Then a delivery system should be planned to help them get what they need in order for them to attain what they want. The practice of giving what the delivery system determines is needed, regardless of what the actual need or want at a particular time may be, is doomed to failure as we move into an era of accountability and client involvement in the delivery of services.

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INTRODUCTION TO SECTION ON LOW VISION

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For nearly fifty years the low vision child who happened to live outside the large city school systems which offered "sight saving" classes, or who was unable to achieve academically even though enrolled in "sight saving" was referred to a school for the blind for placement. Here he frequently was a misfit because of the emphasis placed on braille, and was often a discipline problem because he saw enough to get into trouble and usually was an instigator of various kinds of disobedience in the school or dormitory. By World War II many schools for the blind as well as public schools were operating classes specifically for those children who used print, although there was a common tendency to restrict enrollment to those whose visual acuity was greater than 20/200. These classes also became available somewhat later for those who used low vision aids, and today are being used for low vision stimulation activities.

The concept that any degree of vision should be viewed as an asset to the child and encouraged rather than stifled was largely the result of crusading by Doctor Gerald Fonda, ophthalmologist, of New Jersey, whose position was reinforced by the low vision aid movement. It was not until the 1960s and the pioneering of Doctor Natalie Barraga that a formal educational program leading to improvement of visual functioning in children with low distance vision was developed and presented.

The position of the AEVH workshop that is concerned with low vision is that the child who enters our schools with any degree of vision deserves the right to develop that vision to the fullest potential. If the schools subscribe to this philosophy, what will be the implications for admission, for educational programming and curriculum, for instructional, as well as ancillary personnel, for dormitory and recreational management, for facilities, equipment, and materials?

The following papers provide some perspectives from which to view this problem.

LOW VISION TRAINING - IMPLICATIONS FOR TEACHER PREPARATION AND PROFESSIONAL DEVELOPMENT

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The trouble with education is . . .

The line above might be followed by one or more of several hundred critical statements most of which are probably true, to some extent. I should like to modify the preface slightly, and then finish the statement by saying:

The trouble with *teacher* education is that the program content is primarily philosophy-based rather than objective-based. Furthermore, teacher training is characterized by a heavy emphasis on didactic teaching and vicarious experiences. Permit me to cite an example from my own experience.

STEC

At the University of Virginia we have what we believe is a pretty fair program for training teachers of exceptional children. In keeping with a national trend toward removal of categorical labels, and in order, hopefully, to make our program more comprehensive and efficient, we decided to explore the possibility of merging the first educational methods courses in the areas of Emotionally Disturbed, Mental Retardation, Learning Disabilities, and Visually Impaired.

We found a great deal of content in common, such as learning theory, diagnostic testing procedures, perceptual-motor development, developing instructional objectives, parent counseling, and language development. So we decided to schedule the courses in the same time slot and team-teach them under the acronym, *STEC: Strategies for Teaching Exceptional Children.*

Topics were selected, with each of the four faculty members taking a fair portion of the class sessions to make presentations on the areas in which each felt most competent. Following each presentation we divided into our specific interest groups and had seminar sessions in which we related the topics of the day to our own area (ED, LD, MR, or VI). Of course, each topic had relevant reading assignments by which the students were to prepare for the upcoming presentation.

We started the semester with Learning Theory, specifically with emphasis on contrasting the humanistic and behavioristic approaches. In the fall of 1971, Skinner's *Beyond Freedom and Dignity* had just been published and was being widely discussed. In addition we had just finished an orientation period for new students which included two days of lightweight sensitivity training. The results of this beginning for STEC were rather exciting, and quite stimulating. However, by the end of the first month, after we had moved into the specifics of teaching strategies, the students became restless and we reaped some of the results of the sensitivity training. That is to say, with only a small amount of encouragement the students expressed their feelings about the course. Most of the students felt intellectually stimulated, but were confused as to what was expected, what they were supposed to get from the situation that could be applied with children. Most of their comments were negative, but constructive. They, for the most part, felt the idea of STEC was OK, but were having trouble relating the content to their own specific areas of interest. We had related practicum experiences, but apparently these were inadequately coordinated.

There is not time to describe the action we took to resolve the problem, but we feel that with the help of the students we made some definite improvements in the course as we went along. My point is this: We developed the course on the philosophical position that most of the content of all of our beginning methods courses was based upon concepts which the various areas had in common, but which needed to be applied in different ways, depending on each child's condition. I think this was a good, valid, and even progressive idea. Our problem was that *we failed to decide at the* *outset the specific behaviors we expected to see in our students after each experience and at the end of the course.* We neglected to do the very thing we had been telling our students to do, that is, to express our outcomes in specific, observable, behavioral terms. As might be expected, this omission did not escape the attention of our students. I don't think this was a unique or isolated experience. On the contrary, I think that this is a common characteristic of teacher training programs. May I say, it is all too common throughout education? Look at your own course of study. How often do your objectives begin with "To understand...," "To *really* understand...," "To appreciate..."? How can you tell when these objectives have been achieved?

In-Service Training

Most of the in-service training with which I have had experience as a teacher and administrator has been similar to our STEC program at Virginia in that it was based primarily upon considerations other than behavioral objectives. More importantly, emphasis has been on didactic teaching and vicarious experiences. Those few experiences which stand out in my memory as the most valuable were characterized by some amount of direct involvement, with clearly understood behavioral goals. However, most in-service training programs in my experience had about as much effect on the behavior of teachers as the appearance of a political candidate on prime time TV has on a group of teenagers. At best they ignored it, at worst they turned it off. After enduring lectures, discussions, movies, slides, and many coffee breaks, even perhaps a cocktail party or two, everyone went back to work at the same old job, same old problems, same old teaching behavior.

Since a teacher's sole reason for existence (professionally, of course) is to modify people's behavior, those of us in the business of training teachers ought to have specific behavioral objectives as the desired outcome for every course, every in-service training workshop, even for every class session. Behavioral objectives for students provide the ultimate criteria for evaluation of teacher effectiveness, for college professors as well as for classroom teachers.

Training in Utilization of Low Vision

Two years ago a number of us were involved in an exercise in skill dissemination which was carried out under the stimulation of the U.S. Office of Education. This was the series of special study institutes on utilization of low vision. The goal was to develop in teachers the skills of assessment of visual efficiency and of training children to make more efficient use of low vision, with the assumption that the teachers would then use these skills to help their pupils. The goal was behavioral, at least in concept, and the skills had been validated through research. Thus the blessings of research would at last be translated into practice and a brilliant shaft of the light of knowledge would pierce the darkness of ignorance.

I had the pleasure of participating in four of these special study institutes, once as a participant, once as a staff member, and twice as director. After all this, I think I'm finally beginning to get the hang of it. Until I tried teaching the subject matter to my own graduate students this past year, there was no evidence before me that our efforts had been successful. Informal inquiries made of administrators whose teachers had participated in the institutes, and direct contacts with some of the actual participants, indicated that in many cases the skills taught were not being used. However, after teaching the theory and the techniques, and providing some supervised practice in administering the visual efficiency scale and using the results in planning training programs, I was delighted to see a real change in my own students' behavior. When they hit the practicum trail in the spring, they were administering the Visual Efficiency Measure all over the place, making profiles, and planning vision stimulation programs for individual students. In contrast to many of the teachers who had been exposed to the short term special study institutes, these graduate students, who had had no more hours of training, were really using the skills.

I hadn't really changed the format much from that which we used in some of the institutes. What I *did* do was change the proportions of time allotted to certain activities. About 20 per cent of the time was devoted to lectures, class discussion, and explanation; about 30 per cent was spent in viewing demonstrations of test administration, profile plotting, and remedial activity development; and 50 per cent of the time was spent in supervised administration of the Visual Efficiency Measure and the relevant activities that followed it. If I could have increased the total time to be spent on training in this area, all of the increase would have been devoted to supervised application and evaluation.

I would like to suggest the following hypothesis: When objectives of training programs are constructed on the basis of the specific behavioral consequences desired, and when the programs themselves provide an opportunity for trainees to have direct experience, performance evaluation, and help in correcting problems, the desired behaviors are more easily established, and probably will continue after the training period ends. With the special study institute as a series of successive approximations of our own desired behavior, those of us who taught in the institutes have confirmed (not developed or created, because they are not new) a few basic principles for in-service training generally:

1. Express objectives in specific, observable, behavioral terms, and make certain that trainees know what they are. For example, one objective of an institute might be: "At the conclusion of the institute each participant will administer the Visual Efficiency Measure to a visually impaired child within a total administration time of fifty minutes or less." This statement is behavioral, and the time limit provides a criterion for acceptable performance.

2. For each in-service program, narrowly limit the topic and the range of behaviors expected. If the topic is assessment and training for utilization of low vision, don't take six hours of an 18 hour workshop with a cram course on the structure of the eye, human growth and development, or theories of perception. If the participants don't already know this, you aren't going to teach it in six hours, but the broadening and dilution of the subject matter may seriously jeopardize the success of the workshop in changing the behavior of the participants.

3. Severely limit vicarious experiences, especially lectures. A little of this goes a long way. At least use a variety of media for vicarious experiences to keep people awake until the fun starts.

4. Place *heavy* emphasis on practical application of the behavior to be learned, and provide adequate feedback so that performance can be improved. Opportunity for application sometimes is important also in demonstrating to skeptics that the techniques, when properly applied, really work. A good example of this is the work which has been done in orientation and mobility in the past ten years. Anyone who has worked under a blindfold knows how reinforcing it is to discover that, but for the use of the hand and forearm technique, one might have broken his nose on an open door.

Applied to training in utilization of low vision, a short-term study institute may include a *brief* background lecture preceded by abstracts (one page limit) of the research, followed by a film or video tape demonstration of the administration of the Visual

Efficiency Measure, and a look at principles and materials used in training programs. The remainder of the time should be used for giving all trainees supervised experience in administration of the measure, scoring, making profiles, and planning a series of lessons based upon the profile. If practical, the institute should also include a session in which each participant has a chance to teach a portion of the visual stimulation program based upon the profile. Finally, plans should be made *during the institute* for evaluation of its effectiveness in terms of the behavioral objectives. Remember: The ultimate objective is the increased visual behavior of low vision children, which is also the ultimate measure of the effectiveness of the in-service training program.

DEVELOPMENT OF VISUAL POTENTIAL IN YOUNG CHILDREN

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Delaware County Intermediate Unit
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It is a pleasure to share with you some of our exciting experiences with very young low vision children. This new adventure has been realized because of the guidance and support of our state supervisor, Miss Elinor Long, and the enthusiastic cooperation of the Elwyn Institute Staff and our County Intermediate Unit.

The complete program for developing the use of remaining vision is diagnostic in nature. The first step is evaluation by a Comprehensive Committee for Multihandicapped, an interdisciplinary team of clinical specialists and educators who spend approximately one week evaluating each child. My job is to meet with our ophthalmologist to study the results of his examination. If there is evidence of any remaining vision, I try to assess the child's visual functioning. The parents of the very young child are requested to bring a favorite toy from home, which is helpful in gaining rapport with the child and valuable in gaining some knowledge of his usable vision and developmental language.

Assessing an older child's functional vision is relatively easy since he has had the advantage of school experiences. Dr. Natalie

Barraga's Visual Efficiency Scale and other visual tasks can be used effectively. However, since most three-year-olds have limited visual images and language, it is best to take them to the classroom to observe their visual and tactual behaviors as they explore their new surroundings. It is also helpful to have the parents present so you can get an idea of their feelings toward the impairment and how they view their child.

Together with educators and other representatives from referring agencies, we meet in committee to attempt to determine the direction the child's program should take as based on our observations of the child's present strengths and weaknesses. A few of us meet with the parents to explain the results of evaluations and the preschool program for visual stimulation.

The children are then placed in the classroom for a temporary period of one or two years in order to stimulate the residual vision before making any final decisions for future educational placement. In other words, we view the classroom as an extension of the clinical impressions. Our ophthalmologist continues to see the child in the classroom setting and also reexamines each child every six months. We inform the other committee members of the child's progress and discuss any pertinent problems.

The teachers accept the child as a child. They are more concerned with the *what* of the child than with the *why* and *how*. They are constantly searching and experimenting to learn *what* he can see, under *what* conditions and with *what* materials. The visual stimulation activities are based on the beginning behavioral objectives of Dr. Barraga's program with much emphasis on developmental language. Teachers expect the child to use his eyes and they gear the individual activities so the child can successfully use some vision most of the day. Motivation has not been a problem. Once the child has some training, he is usually self-motivated when he knows he can see.

As we all know, visual stimulation is more than what happens at school. It is vital that parents participate in the program since some of the activities must be reenforced at home. A social worker and I meet with our parent group each month and when the need arises, individual parents visit the classroom to observe the program. Our parents have made many fine suggestions and contributions in the last two years. One father designed a slanted light box which has proved very helpful for motivating rubella children to focus and track representative forms.

After the diagnostic study and enough time devoted to stimulating vision, an appropriate educational placement is recommended. We started our program with six four- and five-year-olds. After one year, two returned to their neighborhood schools with the support of the itinerant teacher and two were placed in our county resource room for visually limited. Two remained at Elwyn in the advanced class and since January have been integrated in the mobile academic classes in preparation for public school this September.

Recently, a group of pediatric ophthalmologists visited our classrooms. They have seen some of these children since birth and were amazed with their present visual performance and highly impressed with the positive change of parent attitude.

Although we have received much fine publicity in the past year, we feel the highest compliments are from the lay and professional visitors who generally comment that "these children don't act like they're visually handicapped." We have all learned much from these children.

THE NEED FOR CURRICULUM PLANNING IN THE FIELD OF LOW VISION

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Experience has shown us that curriculum planning, implementation, parent preparation and in-service training of total staff are necessary each time a new program is introduced into our schools. Training of those involved in the program and supplying the necessary materials for the program are not enough to guarantee success. Commitment to the program with provision for scheduling constitutes a basic step, for scheduled time is a must. The most dedicated staff with a great desire to facilitate a change or initiate a program will find that it just does not happen until time is set aside for it. For administrators, this creates the problem of careful selection of programs with the needs of the students as the first consideration. Each year there are requests to add courses to the curriculum until there are not enough hours in the week to meet the requests. What can be eliminated? This is a constant problem.

Since total staff involvement is so important to the success of a program, consideration must be given to the number of innovative programs which can be initiated in any one school year. In our eagerness to do everything possible for the youngsters, it is easy to become involved in more changes than we can handle well at one time. Delay may be disappointing, but haste can be disastrous. It is far better to involve those who are convinced that the program is necessary in selling the program to others than to begin a program before you are fully prepared to implement it.

Developing the visual potential of children has high priority, for the special needs of children with low vision or any residual vision have long been recognized and often not too successfully met. The pendulum has swung, in my 40 years in the field, from prohibiting the use of residual vision on the basis that use would be harmful to devising a program for stimulating the use of any residual vision on the basis that such use is not harmful unless a specific condition exists in which instruction would not be appropriate. Thank heavens for change, for it was a real chore to keep a child from using his residual vision if he had found out that he could use it. Some of you may remember the dark study hall rooms, the poorly lighted classrooms, the bibs covering the braille books and the tricks the youngsters tried to overcome these obstacles.

The work of Dr. Natalie Barraga in research which proved the efficacy of a program of intensive, sequential teaching to stimulate and train the utilization of low degrees of remaining vision, the development of a program of instruction by Mrs. Rosemary O'Brien, Mrs. Sylvia Hoffman and Mr. Ronald Howard for Montgomery County, Maryland, Public Schools, and the master teacher institute at the University of Texas have given us the foundation for the development of programs nationwide. The American Printing House for the Blind produced materials for use in a program to stimulate and train the utilization of residual vision.

Federal funds made possible a workshop to train teachers in Maryland in the use of the materials which have been devised. We were fortunate in having Mrs. Rosemary O'Brien as Co-Director of this workshop with Dr. Natalie Barraga and Mrs. Sylvia Hoffman among the consultants. Eleven of the twenty-five participants were from our faculty. Each teacher had the experience of working with a child and seeing the progress which could be made by using the materials provided. The next step in getting for the children the help which they need is in the hands of administrators of school programs.

At the Maryland School for the Blind, we now have one teacher who attended the Master Teacher Institute in Texas and ten of the eleven who had workshop training in stimulation of residual vision and we have purchased from the American Printing House for the Blind the materials necessary to begin a program. Interest is high, and time will be allotted for beginning our program in the 1972-73 school year with students who are enrolled in our school. A small group of students, identified in 1971, will be scheduled for the initial program. The parents of these children were contacted at the time of the summer program and have some knowledge of the program.

Do we need a specialist in low vision to coordinate the total effort to serve individual children? Such a person would definitely be an asset, but, from a practical point of view, it may not be possible to add a person to the staff. In this situation, a person on the staff may be able to gain expertise and serve as coordinator. In our case, the curriculum coordinator is qualified to coordinate the low vision program in conjunction with his work on the total curriculum. The mobility staff has already expressed a desire to do more intensive work with the physical education department in working with low vision students. These two departments and skills of daily living and home economics can make a real contribution toward meeting the needs of children with residual vision through careful planning, implementation and cooperation with the classroom teachers, parents and dormitory staff and working closely with the optical aids clinic.

The health service staff is constantly collecting data on the students which is helpful to all who work with them. Annual ophthalmological examination reports with recommendations for those who should be seen in the low vision clinic help identify new students or students with changing vision who should be screened for the vision stimulation program. I would expect that very few of the children will have had an opportunity for pre-school work in vision stimulation.

Guidance counselors, psychologists and psychiatrists might well become involved in the low vision program as it relates to students, staff members and parents and their attitudes and adjustments to changes. They would be valuable indeed as participants in an in-service training program.

In-service training programs for total staff are becoming increasingly important in our changing schools. The coordinator of cottage family life supervisors would play a vital role in planning these programs and making them meaningful for his staff. The president of the P.T.A. and of the Mothers' Club or their representatives would necessarily be involved in facilitating work with parents. Classroom teachers trained to follow through on all phases of low vision stimulation can reinforce the work of the specialists.

Optical aids, illuminating devices and magnifying devices are available, but some of them are quite expensive. It is necessary to experiment with such devices and determine which ones are most useful before investing in them. In our experiments, we have found very versatile the Visualtek Read/Write Systems, a closed-circuit television aid which magnifies an image up to forty times and improves the contrast. Reversed displays (white on black) reduce glare and prove much easier for some students to see. Our students reacted well to this aid. Hi intensity lamps have given some students the illumination they need right on the work which they are doing, and a variety of small magnifiers have helped other students.

Nationwide curriculum planning in the field of low vision will make it possible for children with some residual vision to benefit from the research which was done by Dr. Barraga, the program of instruction which was so carefully devised by Mrs. O'Brien, Mrs. Hoffman, Mr. Howard and implemented by Montgomery County itinerant teachers, the materials which are available through the American Printing House for the Blind and the expertise gained by teachers in workshops. We know the needs of the children. We know we have not met the needs adequately in the past. We know that some children have learned how to use their residual vision through a sequential curriculum to train the effective use of low degrees of remaining vision. We know that to children with severe visual impairment, even a little gain in visual efficiency is valuable. Let us make our goal a nationwide effort to include stimulation of residual vision in our curriculums.

EDUCATIONALLY SIGNIFICANT VISUAL ASSESSMENT IN YOUNG CHILDREN

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When a partially sighted child is being evaluated for an educational program, the ophthalmologist consulted assigns a set of medically meaningful values and expectations for that child's visual abilities. It is the purpose of this paper to translate these values and expectations into educationally significant assessments. The partially sighted child is defined for educational purposes as including distance visual ranges in the best eye or in both eyes together of from 20/200 to approximately 2/200 acuity.

Visual acuity is a measure of the smallest retinal formed image which can be distinguished by the human eye. It is the combination of the "minimum visible" or light sense stimulus and the "minimum separable" or form sense stimulus. Standardized optotypes or symbols subtend upon the retina an angle of 5 minutes of arc at any given distance. The smallest distinguished subdivision of the form is one minute of arc[1]. The numerator of the acuity measurement is the test distance and the denominator denotes the smallest symbol size seen at that distance. This value is influenced by the judgment and experience of the observer, the region of the retina stimulated, the intensity and distribution of the illumination, the spectral nature of the light, the time of exposure, the effect of the movement of the object and whether the test is performed on each eye singly or both eyes together[2].

The macular area develops the highest acuity in well illuminated situations while the peripheral or extra-macular retina is the most efficient in reduced illumination. The spectral feature of the illumination affects the acuity. Less acuity is recorded in the violet range of the spectrum while greater acuities are noted for the longer wave lengths. Greater acuity is obtained with short observation time versus continued observation or staring. Movement of the object or of the head or eyes reduces the acuity in proportion to the speed of the movement. Increasing the luminence levels provides an increase in the visual acuity. In children with nystagmus or head bobbing, increased room light may improve visual function. The distribution of the illumination affects acuity. An increase in the contrast between object of regard and its background increases visual acuity. Teachers should consider this factor when presenting written material to the student in the form of blackboard lettering and duplicated material[2].

The ophthalmologist and educator often examine partially sighted children with congenital or acquired neonatal defects who have not learned to utilize the residual vision present. These children have been raised as "non-seeing" individuals and have no concept of forms, figures, colors, letters, etc. Instead of revealing their ignorance, they often feign an inability to see and score less on visual testing than they deserve. This oversight has been recognized and educational measures are being provided in the form of neonatal stimulation, pre-school and school educational programs[3].

The measurement of the visual acuity alone does not reveal the patient's total visual dysfunction. Other physiologic and pathologic parameters plus the inter-relationships between a child and his parents, teachers and physicians over a prolonged period establish a value of what the visual limits may be. When maximum visual stimulation has been achieved, an acuity value under optimum conditions may be established for each patient which reflects full visual potential. The child may then be placed in an educational situation that duplicates or falls within the upper limits of his ability. For example, a child with 20/200 visual acuity who sits 20 feet from the blackboard in the classroom would require a teacher to print letters 3½ inches tall (20/200 designation). An additional variation in any of the above mentioned factors which affect acuity would reduce the letter size to below acceptable ranges for this child. Therefore, larger letter sizes or closer placement to the blackboard would be recommended for this student. This same notation may be utilized by the mobility instructor for greater distances. The size of the symbol doubles with the doubling of the distance. The 3½ inch letter at 20 feet (20/200) requires a 7 inch letter at 40 feet, a 14 inch letter at 80 feet, etc. This information becomes meaningful in distinguishing street signs, transportation signs, etc. which often do not reach the size requirement for a partially-sighted patient.

Acuities less than the largest common symbol from the Snellen chart are recorded in low vision patients. The largest letter, often 20/200, is brought closer to the patient or the patient may walk toward the chart until he is able to distinguish the symbol. The recording of the distance is the numerator and the denominator denotes the symbol size, i.e., 10/200. Greater accuracy is imparted by reducing the distance of the patient from the standard acuity chart and recording his performance with greater numbers of symbols. This value is converted to the 20 foot designation by multiplying both the numerator and the denominator by the same factors, i.e., 4/50X5/5=20/250. The examiner's fingers subtend approximately the same angle as the 20/200 optotype and may be substituted for the letter notation, such as counts fingers at 3 feet or 3/200[4].

There are additional methods of determining visual acuity in infants, pre-school, illiterate or uncooperative children[5]. Optokinetic nystagmus, pupillary responses, fixation responses and illiterate symbols are included. Of note is the extrapolation of values achieved by determining the fixation ability of the eye. Good, central and maintained fixation indicates acuity in the range of 20/15 to 20/200. Good, central but not maintained fixation ranges from 20/30 to 20/1000 while eccentric or no fixation indicates acuity of 20/200 or 20/1400[6].

Near visual acuity with and without distance correction is always determined in children with low vision. It is essential in patients with peripheral medial opacities, aphakia, nystagmus, paresis of accommodation, irregular and high astigmatism, high hypermetropia, organic amblyopia or other pathological defects where distance vision may not be useful. The near visual acuity and the circumstances surrounding this measurement should be transmitted to the educator. The notation may be recorded as Snellen acuity and is the visual angle at a given distance. Jeager and point print denote type size which can be directly related to educational materials. The distances from the eye at which the acuity is obtained should be included. The illumination upon the written material during the testing is recorded as intense light, direct or indirect, or reduced illumination.

Binocular determination often exceeds uniocular test results even though only one eye is functioning maximally. Patients with eccentric fixation may achieve greater acuity results with single letters than they do with lines of print. The test distances between maximum achieved acuity versus comfortable reading acuity are often different. The child may achieve a high degree of near vision with great effort at very close ranges with very slow recognition time. With larger print at greater distances, the same child may not achieve as high an acuity determination but he may increase his speed of recognition of letters, words and concepts and obtain more comfort and enjoyment from his reading material.

Reading performances may be variable in visually limited children. The ability to read standard print depends upon the child's intelligence, motivation, counseling, optical correction and educational encouragement. Magnification is obtained by holding the material closer to the eye, by the use of special lens or by large type books. Most children have an ample amount of accommodation in the early years to compensate for excessively close reading distances[6].

Learning disabilities and reduced visual acuity are unrelated as long as the print is visible. However, partially sighted children may co-incidentally have learning disabilities and may need the same remediation techniques as a sighted child[4].

Visual field examination is a continuation of the visual acuity measurement over the whole useful retina. The fields are influenced by the same pathological and physiologic variations as the visual acuity determination. Fields may be divided into central or macular fields and peripheral fields. The child with a central field loss may have excellent traveling or mobility vision but is able to read only large print without magnification. Patients with severe peripheral field loss or constrictions, homonymous heminopsias and inferior altitudinal heminopsia, may have excellent central or reading vision but be unable to travel. However, if the field is less than 10 degrees, the patient may not be able to read comfortably because the field decreases rapidly as print is brought toward the eye. Other patients may have fields limited to segments which project only short distances for them. Mobility depends upon projection and the acuity at that distance. Right homonymous heminopsias without macular sparing, inferior altitudinal and bitemporal heminopsias limit reading ability because the patient can see no words in the field ahead[7].

The room illumination and that upon the object of regard influences visual function in many patients but is variable even in patients with the same disease process. Patients with night blindness are almost totally incapacitated in diminished illumination while patients with day blindness find acuity decreasing with increasing illumination. Patients with albinism, achromatopsia, aniridia, posterior subcapsular cataracts, corneal opacity, some macular degeneration and others affected by photophobia, often prefer diminished illumination. Patients with colobomas, miotic pupils, glaucoma, healed chorioretinitis, pigmentary degeneration, optic atrophy and high myopia, aphakia and most macular degeneration prefer maximum illumination[7]. Glare is troublesome to most visually limited children. Each patient must select his own best illumination criteria and no rule is absolute.

Color vision testing adds another parameter to the visual assessment[2]. Defects may fall into three general categories and a past history is important in differentiation. Eight percent of boys and 0.4% of girls are hereditarily color defective. Two types exist: the first is dyschromatopsia in which color confusion occurs and the second is achromatopsia in which color discrimination is absent and vision is monochromatic. Color testing in school children is useful to alert kindergarten and early grade teachers to a student's ability to distinguish colors. Emphasis is often placed upon color discrimination in the early grades and penalizing a young child because of an inherited defect only leads to frustration. All color defectives are able to distinguish traffic signals of red and green by intensity, position of lights or by color variations of the lights.

Acquired color defects occur with retinal and/or neural diseases. Generally blue-yellow defects occur with retinal diseases and red-green defects occur with optic nerve diseases. These subdivisions are not inviolate and depend upon the severity of the pathologic involvement. Repeated color testing aids the ophthalmologist in assessing the pathologic progression of some ocular defects and functions as a useful prognostic tool. A third group of color defectives occurs in those patients who have not learned color differentiation. Color education is necessary before color testing is valid.

Other less commonly used but important tests of visual function are the electroretinogram, electroencephalogram, dark adaptation studies, flourescein angiography and neurologic evaluation.

There are many abnormal positions and movements of the head and eyes that disturb teachers, parents, patients and physicians. Abnormal head posture may be due to strabismus, retinal fixation anomalies, nystagmus, refractive errors, orthopedic and central nervous system defects.

Paralytic strabismus produces abnormal head postures to compensate for diminished field of muscle action, or to re-establish binocular vision in a part of the field. Abnormal head postures occur as tilts to the shoulders, depression or elevation of chin and face turns. They may occur singly or in combinations. Since the child may be attempting to achieve greater function by adopting the head posture, efforts should not be made by the educator to rectify this abnormality.

Nystagmus may occur as horizontal, vertical or rotary or in combinations. The ocular movements vary in direction, rapidity and extent and may be pendular, jerky or both and vary in different directions of gaze. It increases with increased visual attention and nervousness and decreases with convergence. A head posture may be adopted to place the eyes in the position of least ocular movement and best visual acuity. Occasionally surgery may be undertaken to move the eyes to a better forward position and relieve the abnormal head posture. Head bobbing or nodding may also occur with nystagmus. Nystagmus patients usually have good near vision, but approximately 20/200 distance vision. Uncommon varieties of nystagmus have poor or good visual acuity at both distance and near and the former type requires special education.

Abnormal head postures may be related to abnormalities of the fixing eye which consist of medial opacities or irregularities, retinal diseases, amblyopia with eccentric fixation and refractive errors.

Children with visual disorders may have defects of other organ systems[4]. Neurologic disease is the most common and consists of seizures, hydrocephalus, microphthalmus, brain dysfunction, mental retardation, cerebral palsy, behavior abnormalities, etc. These children may also have psychological abnormalities related to their poor visual capabilities, poor family and peer relationships or poor self-image. Orthopedic anomalies may hinder mobility and Braille education. Metabolic diseases, particularly diabetes, are associated with peripheral neurologic abnormalities with decreased sensation and decreased ability to read Braille.

The ophthalmologist must establish a working prognosis for long and short term goals. The prognosis is compiled from the patient's own history and physical findings, family occurrences and tendencies and a review of similar cases in the literature. A prognosis is included in all school reports but it must be clarified. The notation of a poor prognosis eliminates attempts by the educator to impart visual stimulation to that child. Even children with inevitable blindness should have an opportunity to obtain as much visual experience as possible before the visual loss occurs.

All available methods of remediation and rehabilitation including psychological must be pursued. Optical methods utilize corrective spectacle lens, bifocals, low vision aids, telescopic aids, contact lens, etc. These aids give the best possible vision under varying circumstances. Distance or intermediate viewing, telescopic spotting or traveling vision requires one set of visual aids while near vision tasks, occupations, and reading require other types. Tinted lens are useful in photophobic patients. Safety, impact resistant, or plastic lens should be routinely prescribed for all children. Contact lens may be worn by some aphakic and anisometropic children.

Magnification requirements vary with age, range of accommodation and the type of pathology present. Patients with limited central field losses or overall depression of visual function respond better to magnification than do patients with large central scotomas or extensive peripheral field losses[5]. Many partially sighted individuals with poor distance vision are quite capable of achieving almost normal near acuities without magnification.

Medical treatment of intercurrent diseases may alleviate symptoms or signs of additional visual defects and emphasize the need for periodic re-evaluation of these children. The onset of glaucoma, uveitis, cataract, secondary membrane opacification, detached retinas, etc., may first be suspected by noting decreasing visual activities, ocular irritability and pain in a previously stable and comfortable but visually limited eye. Medication, surgery and optical aids remedy these conditions and may return the eye to its previous level of competence.

Enucleation of blind, painful, irritated or cosmetically disfigured eyes may be indicated in older children who must meet the public and accept job opportunities. Confidence in personal appearance often bolsters the young adult to success where failure and introversion might otherwise intervene.

Genetic counseling is encouraged for parents with children who have hereditarily transmitted defects and for young adults with hereditary defects contemplating marriage. Curtailment of families with inherited defects is strongly advised.

It has been the custom in the past to conserve vision by non-use of the eyes. Today, the concept of maximum stimulation is seen to be of more value and educational programs are stressing the increased use of residual vision[3].

Recommendations may be made by the physician to the school system for the type of education for which he feels the child is suited. However, the total visual efficiency or visual function of the child cannot be measured numerically. The use of residual vision depends upon motivation, intelligence, personality, the amount of vision correction possible, the type of defect and age of onset, guidance, experience, age, and encouragement by peers, parents and instructors[6]. Observation of the child by the teachers, positive reinforcement for successes in learning and repeated re-evaluation by the physician brings about maximum use of the eyes. Final placement depends upon recommendations from teachers, counselors, parents and ophthalmologists as well as trial and error efforts on the part of the student.

Print size is best determined by the needs and abilities of the child and both regular and large type print may be used interchangably. Large type (18 and 24 point) is indicated when the distance acuities are 2 to 10/200, when 12 point (pica typewriter) cannot be read at 2 inches from the eyes, when greater distances are needed (mathematics and accounting) and when large type provides more comfort for a given patient[7]. The demand for large type books probably exceeds the need. Magnification of the existing print can be achieved by reducing the distance from the eye to the printed material and this produces greater magnification than that of the large type held further from the eye[7]. The disadvantages of large type relate to their general unavailability in higher education and in all subject matters, excessive book size and weight and exaggeration of the difference between the visually limited child and his peers. If the child is unable to read print without fatigue and at adequate speed, records, tapes, readers or Braille may be substituted. Braille is indicated for patients with acuities less than 2/200, an inability to read 18 point print at 1½ inches or the prognosis for future loss of vision is pronounced.

Physical activities are commonly limited in partially sighted children. Normal physical development and energy release is needed to develop bodies and body image. Restriction of contact sports such as football, boxing, diving, etc., is wise in patients with a predisposition to detached retinas. However, routine gym classes conducted for partially sighted children rarely include such sports.

In summary, the information sent to the educator by the ophthalmologist has value in helping to place a partially sighted child in the best educational situation. By cooperation among all those working with visually handicapped children, a proper continuing assessment of significant visual function and therefore, educational successes, may be made.

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Fifty-Second Biennial Conference

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EQUAL EDUCATIONAL OPPORTUNITY FOR ALL THE VISUALLY HANDICAPPED

Association for Education of the Visually Handicapped
919 Walnut Street 4th Floor
Philadelphia, Pa. 19107

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ASSOCIATION FOR EDUCATION OF THE VISUALLY HANDICAPPED

Known first as the Instructors of the Blind, and later incorporated as the American Association of Instructors of the Blind, AEVH began in 1853 with a national meeting of superintendents of sixteen residential schools for the blind. Except for a few years when national emergencies prevented, conventions have been held biennially since that time. At the 1968 convention, the name of the organization was changed to Association for Education of the Visually Handicapped.

In 1952 the Workshop method of national conferences was adopted and membership was broadened to include all who were interested in improving the educational opportunities of visually handicapped children. In the Workshops, educators are able to define problems and work actively toward their solutions. Under the leadership of their own elected officers, workshops may continue in common efforts between national conventions, often producing newsletters or taking action at regional meetings. Student chapters have now been formed at several universities and several state chapters are functioning very effectively. In 1974 AEVH developed regional organizations which combine considerable independence with a close and integral relationship with the international association. These facilitate regional meetings, bring into active participation many more members, and make AEVH responsive to the special needs within the region.

AEVH publishes a newsletter called the FOUNTAINHEAD, a volume of selected papers from its biennial conference, and provides the professional journal, EDUCATION OF THE VISUALLY HANDICAPPED, for its members. The organization also participates actively in teacher and houseparent/child care worker certification, training institutes, the development of special standards, the encouragement and report of research in the field, and cooperation with national and international agencies and organizations interested in the education of visually handicapped children and youth. The popular AEVH brochure on education of the visually handicapped as a career is annually sent to many guidance counselors and young people who seek information relevant to their own choice of a profession.

AEVH is affiliated with the Council for Exceptional Children, a Department of the National Education Association.

For further information, write AEVH Executive Secretary, 919 Walnut Street, 4th Floor, Philadelphia, Pennsylvania 19107.

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MEETINGS

The following is a list of the conventions of the American Instructors of the Blind (1853-1871), the American Association of Instructors of the Blind (1872-1968), and the Association for Education of the Visually Handicapped (1968-1974):

1st Meeting: August 16-18, 1853, at New York, New York
2nd Meeting: August 8-10, 1871, at Indianapolis, Indiana
3rd Meeting: August 20-22, 1872, at Boston, Massachusetts
*4th Meeting: August 18-20, 1874, at Batavia, New York
5th Meeting: August 15-17, 1876, at Philadelphia, Pennsylvania
6th Meeting: August 21-23, 1878, at Columbus, Ohio
7th Meeting: August 17-19, 1880, at Louisville, Kentucky
8th Meeting: August 15-17, 1882, at Janesville, Wisconsin
9th Meeting: August 19-21, 1884, at St. Louis, Missouri
10th Meeting: July 6-8, 1886, at New York, New York
11th Meeting: July 10-12, 1888, at Baltimore, Maryland
12th Meeting: July 15-17, 1890, at Jacksonville, Illinois
13th Meeting: July 5-7, 1892, at Brantford, Ontario, Canada
14th Meeting: July 17-19, 1894, at Chautauqua, New York
15th Meeting: July 14-16, 1896, at Pittsburgh, Pennsylvania
*16th Meeting: July 12-14, 1898, at Lansing, Michigan
17th Meeting: July 9-11, 1902, at Raleigh, North Carolina
*18th Meeting: Jyly 20-22, 1904, at St. Louis, Missouri
19th Meeting: August 21-23, 1906, at Portland, Oregon, at Salem, Oregon, and at Vancouver, Washington
*20th Meeting: July 14-16, 1908, at Indianapolis, Indiana
*21st Meeting: June 28-July 1, 1910, at Little Rock, Arkansas
*22nd Meeting: June 25-28, 1912, at Pittsburgh, Pennsylvania
*23rd Meeting: June 28-30, 1915, at Berkeley, California
*24th Meeting: June 4-7, 1916, at Halifax, Nova Scotia, Canada
25th Meeting: June 24-28, 1918, at Colorado Springs, Colorado
26th Meeting: June 21-25, 1920, at Overlea, Maryland
27th Meeting: June 27-30, 1922, at Austin, Texas
*28th Meeting: June 23-27, 1924, at Watertown, Massachusetts
*29th Meeting: June 21-25, 1926, at Nashville, Tennessee
*30th Meeting: June 25-29, 1928, at Faribault, Minnesota
*31st Meeting: June 23-27, 1930, at Vancouver, Washington
*32nd Meeting: June 27-July 1, 1932, at New York, New York
*33rd Meeting: June 25-28, 1934, at St. Louis, Missouri
34th Meeting: June 22-25, 1936, at Raleigh, North Carolina
*35th Meeting: June 27-30, 1938, at Lansing, Michigan

*36th Meeting: June 24-28, 1940, at Pittsburgh, Pennsylvania
*37th Meeting: June 26-30, 1944, at Little Rock, Arkansas
38th Meeting: June 24-28, 1946, at Watertown, Massachusetts
*39th Meeting: June 21-25, 1948, at Austin, Texas
*40th Meeting: June 26-30, 1950, at Philadelphia, Pennsylvania
*41st Meeting: June 29-July 3, 1952, at Louisville, Kentucky
42nd Meeting: June 27-July 1, 1954, at Batavia, New York
43rd Meeting: June 24-28, 1957, at Worthington, Columbus, Ohio
44th Meeting: June 22-26, 1958, at Vancouver, Washington
*45th Meeting: June 26-30, 1960, at Donelson, Tennessee
*46th Meeting: June 28-July 2, 1962, at Miami Beach, Florida
*47th Meeting: June 21-25, 1964, at Watertown, Massachusetts
*48th Meeting: June 26-30, 1966, at Salt Lake City, Utah
*49th Meeting: June 23-27, 1968, at Toronto, Ontario, Canada
*50th Meeting: June 28-July 2, 1970, at New Orleans, Louisiana
*51st Meeting: June 25-29, 1972, at Miami Beach, Florida
*52nd Meeting: June 23-27, 1974, at San Francisco, California

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*Copies of convention proceedings or selected papers for these meetings may be purchased by writing to the Association for Education of the Visually Handicapped, 919 Walnut Street, 4th floor, Philadelphia, Pennsylvania 19107. Copies of the Indexes for 1922-1930, 1931, 1932-1940, and 1944-1960 are also available.

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EQUAL EDUCATIONAL OPPORTUNITY FOR VISUALLY HANDICAPPED CHILDREN: HISTORY AND CONCEPT

Berthold Lowenfeld, Ph.D.

Author and Educational Consultant
Berkeley, California

The topic "Equal Educational Opportunity for All the Visually Handicapped" has been chosen as the theme of this, the 52nd Biennial Conference of the Association for Education of the Visually Handicapped, and Ferne Roberts, our President-Elect and Program Chairman, has asked me to deliver the keynote address for this occasion. First, let me stress that I believe our Conference theme to be provocative and timely and that the Program Committee deserves great credit for having designed an excellent sequence of meetings dealing with so many ramifications of this theme. Second, let me confess that the breadth of my topic scared me considerably because I felt that in order to cover it, I would need more time and, in deference to the greater attractions of an evening in San Francisco I had from the beginning planned to limit my talk to about half an hour. Only when I decided to focus on some more definite aspects of the topic, was I able to proceed with the preparation of my talk. As a consequence, I have taken the liberty to change my assignment to "Equal Educational Opportunity for Visually Handicapped Children: History and Concept."

The history of the education of visually handicapped children is at the same time a long and a short one. It is a long one because individual blind children have been, albeit informally, educated practically for millenia, as the success stories of so many blind men and women show who acquired an education by their own efforts when no formal educational facilities were available to them. They were admired by their contemporaries and are still shining examples of human fortitude and persistence. True, many of them had the support of dedicated parents and ingenious teachers, but it was their own indomitable drive for achievement and spirit of adventurousness that carried them to success. Their names range from Homer to Helen Keller, from Didymus of Alexandria to Maria Theresia von Paradis of Vienna. And there are hundreds of names, each a symbol of success, in this line of blind self-emancipators.

The history of the education of blind children is a short one, because organized educational measures for them began only less than 200 years ago, in 1784, when Valentin Haüy established the first school for the blind in Paris. In the United States, it is even shorter because the first schools for blind children were opened in Boston and New York in 1832, less than 150 years ago.

At the time of the beginning of organized education for blind children no other form of providing education for them could have been conceived except for separate educational institutions. Why was this the case? There are two reasons. One is the general evaluation of blindness as a handicap and the other the condition of regular schools at that time. Blindness was generally considered to be such a serious, even overwhelming, handicap that no other but a highly specialized educational environment was considered adequate to cope with it. There is one comment in Haüy's famous *Essay on the Education of the Blind* which shows the limited expectations he had for the blind even after they had acquired an education: "No, we never pretend that those of the blind who even discover the most shining parts shall enter into competition, either in the liberal sciences or mechanical arts, with scholars or artisans who are blessed with the use of sight, even when their talents rise not above mediocrity (1786 in *Blindness 1967*, p. 183)." Such minimal expectations on the side of the founder of the first school for the blind show how severe a handicap he considered blindness to be. And the views of his less informed lay contemporaries must have been even more negative. No wonder then that only separate specialized facilities appeared feasible to him as a medium for the education of blind children. Public schools, the only alternative to separate facilities, were at that time, in Europe as well as in the United States, rigid, undifferentiated, and undifferentiating. Children were treated as little adults with no consideration of their special nature and needs; their minds were considered *tabulae rasae* on which the teacher had to engrave whatever he wanted them to learn, and this was confined to religion and the rudiments of the 3 R's. Understanding of the individual needs of children was not built into these schools. Of course, there were always teachers who showed a natural understanding of the children entrusted to them for an education, but they were the exception. All this made regular schools unlikely placement possibilities for deviant children. Thus, separate facilities came into existence.

The issue of equality in the sense of sameness was built into the education of blind children from its beginnings. Haüy and also America's outstanding educator of the blind, Samuel Gridley Howe, the first director of Perkins, were both committed by their conviction to have the education of blind children conducted in the same way as that of seeing children. This led both of these otherwise great men into an unfortunate insistence that reading and printing for the blind must use the letter shapes commonly read by the seeing and the only concession to blindness was that embossed print was used. This insistence caused what is known as the "Battle of the Dots" that delayed acceptance of braille for many decades. This principle of sameness was enunciated most clearly by the outstanding blind educator, William Henry Churchman, who presented two resolutions in 1873 at the 3rd convention of this organization, then the AAIB: "First, That the education of the blind should as far as possible, conform to that of the seeing," and "Second, That in schools for the blind, apparatus and methods employed should vary as little as possible from those used in most approved schools for the seeing (Andrews & Bledsoe, 1972, p. 22)." Thus, the assumption could be made that separate and equal facilities were available for the blind when residential schools for them came into existence. Separate they were but about equal we will have more to say.

The general precept that education of the blind child should conform to that of the seeing dominated the field throughout the 19th and well into the 20th century. Though the question of reading and printing for the blind was decided in favor of braille, a reading medium that is blindness-compatible, methods applied in the education of blind children remained largely the same as those used in schools for the seeing. It was only in the second quarter of the 20th century that the increasing acceptance of psychology as a determinant of methods initiated a change. Educators who had considered intelligence and achievement testing of the blind as the only contribution psychology could make were made aware of the special psychological needs of visually handicapped children. They recognized that the visual handicap demanded special methods and that equality of educational opportunity could only be achieved by meeting the special needs of visually handicapped children. This constituted a considerable modification of the principle of sameness and shows that sameness does not necessarily result in equality. This recognition finds full expression in the program of this convention which deals with many of the areas in which special problems arise on account of the visual handicap: cognitive and concept development, communication skills, mobility, daily living skills, and sex education. Thus, we have come to the somewhat paradoxical conclusion that equality of educational opportunity for visually handicapped children can only be achieved by giving up the theorem of educational equality in the sense of sameness and by meeting instead the special needs that grow out of the child's handicapping condition by a canon of special methods.

This recognition is not confined to visually handicapped children but extends to others who form minority groups. For instance, the child with learning disabilities, the mentally retarded child, the multihandicapped child, and the ghetto child. It is becoming increasingly understood and accepted that each of these minority groups of children have their own educational characteristics and require specific means of remediation and instruction. Indeed, integration of these children, or as the modern jargon goes, their mainstreaming, can only be viable if their special needs receive recognition and are met. Otherwise, equality of educational opportunity remains an unfulfilled dream.

Now to the concept of equality of educational opportunity.

Equality of opportunity is rooted in what has been called the American Creed. This Creed embraces ideals that were expressed in a number of declarations and have become a part of the American consciousness. They are articulated in the Declaration of Independence, in the Constitution of the United States and of many individual states, and in the Bill of Rights. They found their latest expression in the Four Freedoms enunciated in 1941 by President Roosevelt. The essentials of the Creed are basic equality, dignity of the individual, liberty to manage one's own personal affairs, the right to property, and certain inalienable rights of freedom, justice, opportunity, and the pursuit of happiness. To this must be added the Four Freedoms: Freedom of speech and expression, freedom of worship, freedom from want, and freedom from fear. This American Creed is not a set of dogmas as Gunnar Myrdal (1962) has pointed out: "The American Creed, just because it is a living reality in a developing democracy, is not a fixed and clear-cut dogma. It is still growing. During the Revolutionary epoch the interests of statesmen and philosophers and of the general public were focused on the more formal aspects of freedom, equality and justice. After a long period of material but not rapid spiritual growth, the American Creed is in this generation in a formative stage. It is now discovering its ideals in the social and economic sphere and in the realms of international organization (pp. 23-24)."

Public interest has indeed shifted from the lofty pronouncement of ideals to the social and economic realities of common life and to the educational rights field that is of special interest to us.

But before we go into these realities I want you to look with me a little closer at the meaning of equality, one of the most talked about but least understood issues. The question most often raised is: How can equality be achieved if we are all born unequal? John Dewey gives us the answer: "Belief in equality is an element of the democratic credo. It is not, however, belief in equality of natural endowments. Those who proclaimed the idea of equality did not suppose they were enunciating a psychological doctrine but a legal and political one. All individuals are entitled to equality of treatment by law and in its administration. Each one is affected equally in quality if not in quantity by the institutions under which he lives and has an equal right to express his judgement, although the weight of his judgment may not be equal in amount when it enters into the pooled result to that of others. In short, each one is equally an individual and entitled to equal opportunity of development of his own capacities, be they large or small in range. Moreover, each has needs of his own, as significant to him as those of others are to them. The very fact of natural and psychological inequality is all the more reason for establishment by law of equality of opportunity, since otherwise the former becomes a means of oppression of the less gifted (1939, p. 403)."

Here we have in a nutshell -- a precious and real golden one -- the clarification of a concept that is fundamental and relevant to our topic.

And now to the realities of what can well be called the educational rights movement. Its great moment came when Chief Justice Earl Warren read on May 17, 1954, the unanimous decision of the United States Supreme Court: "Separate educational facilities are inherently unequal." And "In these days it is doubtful that any child may reasonably be expected to succeed in life if he is denied the opportunity for an education. Such an opportunity, where the state has undertaken to provide it, is a right which must be made available to all on equal terms (Supreme Court of the United States, in *Brown v. Board of Education*)." The historic decree of 1954 made the "separate but equal" school provisions for black children illegal and created a shock wave of school integration measures that until today has not lost its impact and controversial character. The decree called for integration of black children into the regular schools but it soon became obvious that placement in these schools by itself would not suffice nor would it make up for the cultural and economic disadvantages under which these children had spent their preschool years. As a result, various special programs like Head Start and compensatory education came into existence to make up for the adverse preschool influences and also to emphasize the cultural assets of the races from which many of these children stem. Federal and state legislative measures strengthened the movement that had a general impact on public school education. Thus, equality of educational opportunity for black children became the law of the land. But as so often the law was ahead of the people and the people must, as the phrase significantly says, live up to it.

Another milestone decision, closer to home, was the Pennsylvania Right to Education case. Its substance was that mentally retarded children were deprived of education by being excluded from appropriate educational experiences though they could learn and profit from education. The main argument that neither funds nor personnel and facilities were available was effectively counteracted by a statement of a spokesman for the Council for Exceptional Children: "If, in fact, the state does not have sufficient funds to educate all of its children, the handicapped youngster must take his share of the cut with the others...but do not expect the exceptional child to bear the whole burden of the state's financial difficulties, Mr. Governor and Mr. Legislator. He will suffer his share of the burden--but, by order of the Federal courts, he will no longer carry the whole burden." The decision reached by the court includes the following historical clause: "Having undertaken to provide a free public education to all of its children, including its exceptional children, the Commonwealth of Pennsylvania may not deny any mentally retarded child access to a free public program of education and training. It is the Commonwealth's obligation to place each mentally retarded child in a free public program of education and training appropriate to the child's capacity...among the alternative programs of education and training required by statute to be available, placement in a regular public school class is preferable to placement in a special public school class and placement in a special public school class is preferable to placement in any other type of program of education and training (Lippman & Goldberg, 1973, p. 31)." The decision in the *Pennsylvania Association for Retarded Children v. the Commonwealth of Pennsylvania* case of 1972 established education for all children as a public responsibility. Many other states have similar cases pending and some have passed legislation that establishes mandatory education for all. The State of Washington in 1973 enacted a law serving this purpose and as a result of it public schools must make provisions to educate all severely and profoundly retarded children. By 1980 enough special classes to accommodate these children will have been established according to plans set up by the Bureau of Education for the Handicapped of the State of Washington.

California's State Superintendent of Instruction, Dr. Wilson Riles, has recently revealed legislation to be submitted that would require all public schools to offer special education for all mentally and physically handicapped children between the ages of 3 and 21. "Shocking as it may seem," he said, "literally thousands of handicapped youngsters are denied public education--a right provided, indeed required, for all normal children in California." He continued, "Those handicapped youngsters who do receive a program are often categorized with labels such as mental retardation and are removed from the mainstream of the educational system--a stigma that frequently remains with them for life."

With education-for-all requirements established either by law or litigation, there is no doubt that considerable numbers of retarded and other multihandicapped blind children will seek admission to public school facilities, local schools as well as residential schools. One can only guess at the extent of these demands because we do not know how many will be released from the state hospitals and how many parents will ask for their admission to public school facilities. The potential magnitude of the problem can be deduced from some figures that I collected in 1968 in connection with the *Study of Multihandicapped, Blind and Deaf-Blind Children in California* (1969). It revealed that there were 1,919 multihandicapped blind children of school age in the state of whom about 1,000 were in state hospitals. These multihandicapped blind children outnumbered "normal" blind children (1,111), almost 2 to 1. To provide special education for these children, quality education that gives them opportunities to develop their individual potential is the challenge with which we are confronted. It will take dedicated teachers, well-trained in educating multihandicapped blind children; it will need research and experimentation to find the best methods to assist these children; and it will require special facilities in school and community to meet the physical and recreational needs of these youngsters. It will also make parent-education programs a necessity. Let it not be said that we took these children out of institutions into the community only to put them into situations that were worse than those from which they came. Schools and communities must cooperate in providing for their education, health care, and leisure time activities. We must not fail them.

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A CRACK IN THE WINDOWS TO THE WORLD

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Our theme for today is "Equal Opportunity for Perceptual and Motor Development." Yesterday, the theme was "Equal Opportunity for Cognitive Development." These two themes underline a quotation from William James, who said, many years ago, "The intellectual life of man consists almost wholly in his *substitution of a conceptual order for the perceptual order in which his experience originally comes."*

With that profound statement I had planned to launch into an equally profound discussion of sensation and images, or perception and cognition, of language development, input-output and feedback systems, developmental psycholinguistics and on and on--until I realized that that approach would do little to bring conceptual order out of the topic of visually handicapped children who may also have specific learning disabilities.

Learning disabilities is a relatively new phenomenon on the educational scene. As recently as 14 years ago, 1960, learning disabilities did not appear even once on the program of the Council for Exceptional Children. There were no training programs for teachers. There were no provisions in schools for children with learning disabilities, there was no mention of learning disabilities in federal or state laws. The Association for Children with Learning Disabilities had not become a reality.

In a brief span of 11 or 12 years, a great deal has happened to the field. Twenty-seven states now have legislation on their books which refers specifically to learning disabled children. At the Federal level, learning disabled children have specific funding under Title VI-G of the Elementary and Secondary Education Amendments of 1970. For the first time, they are also mentioned in the new Rules and Regulations published by the Bureau of Education for the Handicapped, in the paragraph which defines who is handicapped. Few colleges or universities with teacher training programs in any category of special education do not have a learning disabilities program. There are now parents groups officially organized in 47 states. Model Centers funded under Title VI-G have been developed in 44 states. Publishers are having a heyday with learning disabilities materials.

Because our field is so new, we have seen panaceas of all sorts developed to cure the learning disabled child. As educators, we have looked optimistically to medicine to cure them for us--first to the psychiatrists, and when that didn't work, to the neurologists and EEG technicians, then we looked to the optometrists, and when that didn't work, to the patterners, the creepy crawlers, or the crawly creepers. In some parts of the country the panacea is in massive doses of megavitamins, a little like the Glutamic Acid era, in other parts of the country the panacea is the development of alpha waves. Recently, I learned that learning disabilities are caused by allergies, and can be cured by antihistamines. I've also heard that learning disabilities are symptoms of hypoglycemia, low blood sugar, and can be cured by eating 5 small hi-protein meals a day. It is no wonder that the parents are confused!

We educators have developed our own miracle cures; in some parts of the country you may as well turn in your teaching certificate if you can't teach ITA - in others it is Distar. In Washington and Oregon it is the Slingerland program. In Texas it is Orton-Gillinghann. In the South it is the Shedd program. Precision teaching using 6 cycle graph paper to "count numbers while adding," or letters or whatever - is the only road to Rome for some. For others, diagnosis may go on for months before anyone gets around to teaching the child.

With all of this activity going on, where are we in the field of learning disabilities?

1. Although a great deal of progress is being made in the basic sciences of biochemistry, psychology, neuroanatomy, neurophysiology, etc., we do not yet know precisely how human beings process information, how or where they store it, or, in other words, *how they learn*. Practitioners in the fields of medicine, psychology and education continue to struggle with an elusive, amorphous disability about which few generalizations can be made.

2. The term learning disabilities continues to be used in a variety of ways, each referring to a different population of children!

(1) One group uses the term learning disability to refer to any child who does not learn for any reason, whether mentally retarded, deaf, blind, crippled, other health-impaired, etc. Learning disabilities then, to some is a synonym for learning problems due to any causes.

(2) Another group uses learning disabilities to refer to any child who doesn't learn for any reason as long as he is not retarded, a slow learner, environmentally deprived, a victim of teaching disabilities, etc.

(3) If learning disabilities is to survive as a respectable category of the handicapped, it is imperative that we reserve the label for children who are not eligible for services under any other category of the handicapped, but who are massively not learning in school. The learning disabled child is one whose learning pattern deviates so markedly from the norm of his peers as to require special education intervention.

According to the definition included in the Learning Disabilities Act, and in the recently published B.E.H. Guidelines, a child with a learning disability is "one who has deficits in one or more of the psychological processes which underlie language, spoken, or written. These may be manifested in listening, speaking, thinking, reading, writing, spelling or mathematical calculations. They do not include learning problems *primarily* due to mental retardation, sensory or motor handicap, emotional disturbances or to environmental disadvantage." (Children with sensory, motor, environmental or affected problems may also have learning disabilities and should receive multiple services).

Most states and local districts use this definition or some minor modification of it. We have almost unanimous agreement on the definition, and almost total lack of agreement on how to operationalize it.

For that reason I would like to suggest that you carry a much simpler definition in your heads. This simple definition would convey three concepts (1) the intact concept; (2) the discrepancy concept; and (3) the deviation concept. The learning disabled child is basically an *intact* child. He is not eligible for service under any other category of the handicapped. He has *discrepancies* in the psychological processes which underlie learning. These process deficits or developmental discrepancies manifest themselves in discrepancies between capacity and achievement. His learning style *deviates* so markedly from the norm of his group as to require special education intervention.

A child may have a learning disability without the presence of other handicaps, or he may have a learning disability in addition to other handicapping conditions, and these require multiple services.

As we move away from the child who is learning disabled and nothing else, to the child who is learning disabled in addition to being visually impaired, we will need to concentrate on the discrepancy clause and the deviation clause, since he is entitled to special service because of his visual impairment. We are talking about the blind child who doesn't learn like other nice, "normal" blind children, or the visually impaired child with severe language problems; or the blind child with a finger agnosia. We could be speaking of the visually impaired child with severe auditory or visual perceptual problems.

What competencies does a teacher of visually impaired children need to have if she is to meet the needs of her students who also have learning disabilities? The teacher will need to have knowledge, skills, experience and materials in at least 8 areas of competence:

Sensory-Motor Processing: Sensory-motor processing refers to the operations whereby information is received, interpreted, stored, and integrated through the sense modalities and motor mechanisms and expressed motorically. The three broad categories which can be delineated for educational purposes are body orientation or body awareness, movement and haptic processing. Closely related to body awareness are the concepts of body schema or body image, laterality, directionality, orientation, synchrony, spatial relations, and temporal relations. The broad areas of movement include coordination, rhythm, agility, flexibility, strength, speed, balance, endurance (Frostig, 1970) and diadochokinesis. Haptic processing is associated with stereognosis, proprioception and localization of tactile stimuli.

Visual Processing: Visual processing involves the reception and translation of visual stimuli into meaningful concepts which can be retained to form new relationships which can be expressed graphically, motorically or orally. (Adequate visual acuity is assumed.)

Some of the visual processing functions are primarily perceptual, some conceptual, and some involve the integration of the visual stimuli with the motor output system. Among the perceptual functions are: attention, discrimination, figure-ground, closure, perceptual speed, constancy, recognitions, and some forms of memory. Among the conceptual functions are: abstraction, analysis, integration, synthesis, transduction and perhaps long-term memory. Among those functions requiring integration of the visual systems with the motor systems are: eye-hand coordination, visual-motor memory, and other forms of visual-motor coordination.

Auditory Processing: Auditory processing involves the reception, selection, and translation of auditory stimuli into meaningful concepts which can be retained to form new relationships which can be expressed. (Adequate auditory acuity is assumed.)

The two broad categories of auditory processing which can be delineated for educational purposes are perceptual and conceptual processes. The following are related to perceptual processing: attention, awareness, localization or focus, screening or figure-ground, recognition, discrimination, closure, sequencing, synthesis or sound blending, analysis, scanning and memory or signal retention. The broad area of conceptualization includes abstraction, integration, transduction, inference, monitoring, judgment or problem solving, and memory. Due to the significant role of language in educational achievement, expressive language, a function of auditory processing, will be viewed and discussed as an extension of this process.

Language Development: Language development involves a sequence of abilities to receive and understand information and/or ideas and communicate them in a meaningful, symbolic way in a written, spoken, manual or gestural form.

Language provides a means for naming or labelling objects and actions, distinguishing between their properties, and describing their interrelationships. Language development can be organized under four primary classifications: phonology, or sounds; morphology, or forms; syntax or structure; and semantics or meanings. The discrete elements in each category can be sequenced from the simple to the complex:

1. Phonology (sounds)
    - Babbling (sound production)
    - Articulation
    - Intonation
    - Discrimination
    - Imitation
    - Sequencing
    - Rhymes
    - Melody, rhythm, accent patterns
    - Sound blending
    - Diadochokineses
2. Morphology (forms)
    - Plurals
    - Tenses
    - Possessives
    - Comparatives
    - Prefixes
    - Suffixes
    - Compound words
3. Syntax (structure)
    - Grammar
    - Concatenations (sequencing)
    - Words
    - Phrases
    - Sentences
4. Semantics (meaning)
    - Over-generalized meanings
    - Specific meanings
    - Classification
    - Concept formation
    - Homonyms
    - Synonyms
    - Closure

Intersensory Integration: Intersensory Integration is the process by which sensory information from different modalities is coordinated or transduced. Sensory information appears to be processed by individual channels in a specific way and then integrated by intersensory processing. Intersensory integration refers to the central synthesis of multiple stimuli which are presented to the same sensory modality. Seeing and hearing are involved when a child reads orally. A child may be able to see well, to hear well, but have difficulty doing both simultaneously. Some children may need to shut their eyes as they process information auditorially. Determining subfactors of each channel is difficult because of intersensory transfer and the difficulty of isolating them (particularly language subfactors). Task analysis techniques as described by Chalfant and Scheffelin (1969) represent a viable model for analyzing learning tasks and facilitating learning activities.

Learning involves an active transaction between an individual and some input. The input is meaningful when an individual performs certain operations or processes upon it. Processing cannot be "given" to a student. Assistance in the development of processes would appear to be the teacher function. Precise teaching strategies need to be developed. Students need to be given opportunities for concrete operations before abstract operations and symbolic content are expected. Rate of achievement varies from student to student and is an important consideration in task determination.

Social Adjustment and Emotional Development: Appropriate emotional development and social adjustment are basic to learning. It has proven helpful for the teacher to separate social behavior from emotional development, since the teacher can elicit dramatic observable changes in behavior, but may find information about emotional development much more difficult to verify. The modification of social behavior in the classroom is at least as important to the role of the teacher as effecting change in the child's ability to count.

Academics: Academic achievement traditionally involves a student's functioning in the scholastic areas of a curriculum which include vocabulary, reading, work-study skills, English mechanics, mathematics, and general understandings in science and social studies.

Reading: Research in reading, writing, and spelling has been abundant, conflicting and confusing. Much of the research falls into the category of redundant research. A possible organization of the content in this area would be:

1. Readiness
    - Discrimination (including auditory and visual)
    - Left-to-right progression
    - Following directions
2. Phonetic analysis
    - Aud-Voc association (letters, words, sound to sight and the reverse)
    - Auditory-visual application (vowels and consonants)

3. Structural analysis (morphology-syntax)
    - Plural nouns
    - Verbal tenses
    - Comparisons
    - Compound words
    - Contractions
    - Root or base word
    - Affixes
    - Possessives
    - Syllabication
    - Accent
    - Abbreviations
4. Context cues
    - Unfamiliar words (identification and meaning)
    - Multiple meanings
5. Comprehension
    - Literal
    - Interpretation
    - Critical
    - Work skills

In spite of the conflicting results of thousands of studies in reading, evidence from a variety of sources seems to support the following conclusions:

1. The most important variable in any reading program is the teacher; comparisons of teaching methods frequently show no significant differences. The *way* the teacher teaches is more important than *what* she teaches.

2. Any method of reading that uses a decoding approach will be superior to a sight method or one which stresses comprehension over word-attack skills.

3. Reading disability cases have more deficiencies at the automatic-sequential level than at the meaningful level.

4. Retarded readers perform at a lower level on tests of visual memory than good readers.

5. Retarded readers do not perform as well on tests of auditory memory as good readers.

6. Visual closure and sound blending are less well developed in poor readers than in good readers.

7. A positive correlation exists between intelligence and reading, particularly in young children.

8. The acquisition of spoken language is closely related to the decoding of written language.

Arithmetic and Mathematics: Research has identified a number of factors which seem to be related to success in arithmetic and mathematical operations, but the extent to which these factors, either singly or in combination, contribute to the attainment of different kinds of quantitative concepts is still open to question.

Studies (Chalfant and Scheffelin, 1969) related to the basic cognitive processes involved in quantitative concepts indicate that at least four factors are involved:

1. Spatial ability
2. Verbal ability
3. Problem-solving ability
4. Neurophysiological correlates

Some techniques to facilitate academic achievement might include:

1. Delineation of specific instructional objectives in all skill areas as well as content areas

2. Sequencing of skills into specific developmental sequences

3. Using criterion-referenced tests to determine the specific task the child has not yet mastered in the sequence

Parts of this series of activities are being provided by many publishers. Some publishers include in the instructional packets only material contained in their own published material. Others provide helpful suggestions using a wide range of suggestions in several basal series. Several school districts, as a part of their curriculum development activities, have found that development of skill sequences and learning packets by groups of local teachers is more meaningful than purchasing such programs from publishers. The process seems more meaningful than the product to some teachers.

The formal development of such techniques for individualization may provide the in-service training and the materials for a more practical, feasible approach to individualization of instruction. It can be hypothesized that such an approach would reduce dramatically the numbers of children referred to special education as "learning disabilities."

I would like to leave you with one last thought, perhaps as profound as the quotation from William James with which we began our discussion this morning.

Progress is being made on many fronts, in the fields of neuroanatomy, neuropsychology, and biochemistry to name a few, in the study of the function of the central nervous system, the study of human information processing.

Much of what we think we know about human learning is in the form of hypothetical constructs. If we could slice ourselves in half and look at learning as it is happening, I doubt if we would see the little boxes of Guilford's factor analytic paradigm. I'm sure children's heads are not organized in layers either, with sensory levels and perceptual levels, and cognitive or representational levels. I'm certain we could not see Hibbs' cell assemblies and phase sequences, or Piaget's stages of cognitive development. I'm certain, however, that we would see a Rube Goldberg contraption in which there would be a continual flow of activity in the form of mechanical, electrical and neural energy. Careful research by such people as Karl Pribram at Stanford, Don Norman and Peter Lindsay, Jane and Norman Mackworth, and Gerald Senf are beginning to say something about human learning that has implications for teaching live children. Studies of memory and attention are especially important.

For example, Don Norman made a simple statement that has profound implications for all of us: "Sensory inputs are modality--specific for only about 1/4 of a second, the time it actually takes to process a visual trace into short term memory before that race is destroyed by new data from the next visual fixation." A visual trace is confounded almost instantly by linguistic rehearsal. This piece of information has been derived from experiments with children, and can be verified. And yet, we in education are still talking about visual learners and auditory learners as if they exist, and we are holding our heads because research in modality training is at best conflicting and confusing.

I would like to suggest that you each go back and look at some of the newer models of human information processing, Jane Mackworth, for example, and apply what we know about teaching to what they know about learning. A Taxonomy of Learning for the Visually Impaired could be developed from such a theoretical base that would truly result in "equal educational opportunity for all the visually handicapped."

THE ASSESSMENT OF SPATIAL CONCEPTS OF VISUALLY IMPAIRED CHILDREN

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The purpose of this study was to replicate the test of *Stereognostic recognition of objects and forms* designed by Laurendeau and Pinard with visually impaired children. This test was constructed to demonstrate the primitive character of topological relations over Euclidean relations. Visually impaired subjects were used to demonstrate that children with a vision loss develop spatial concepts in the same sequence as normal children.

Piaget introduced a distinction between perceptual space and intellectual space, and, at the level of intellectual space, between sensorimotor and representational space. The distinction between perceptual space and intellectual space is of primary importance. Piaget explains in detail the differences between perceptual and intellectual space (Piaget 1956, 1967). Perceptual space is much more limited in scope than intellectual space. It is ego centered, that is, tied to a person's location to an object. What appears to be is what is of importance.

Intellectual space is an operational system and as such derives its content from abstractions of the actions and not from particular features of an object.

Piaget distinguished three major types of spatial relations based on geometry; metric or Euclidian space, projective space and topological space. The child's development of space is based on topological relations which precedes the projective and Euclidian structures which derive from them. "For instance, if you give a child of about three and one-half years old figures of the kind in Figure 7 to copy, he will copy them all as closed curves without paying attention to the metric characteristics, the equality of the sides, angles, etc. If you give him the type of drawing in Figure 8 to copy, he will copy them simply as open curves. If you give him a series like the one in Figure 9 with one constant figure and another one either inside this figure or outside it or on the border, he will have no trouble copying this even though he cannot yet copy a square or make a closed triangle which differs from a circle." (Ripple & Rockcastle 1964)

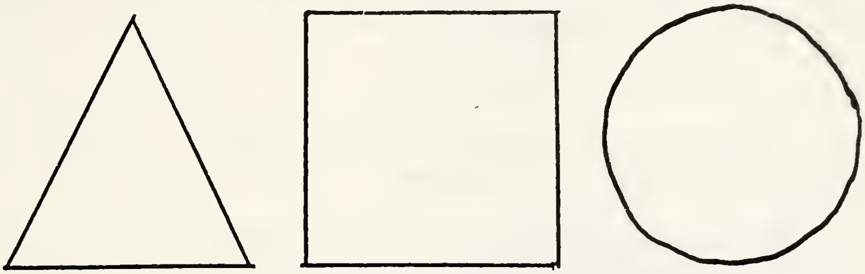

Figure 7

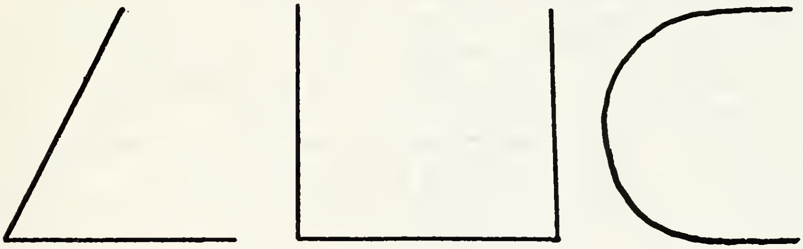

Figure 8

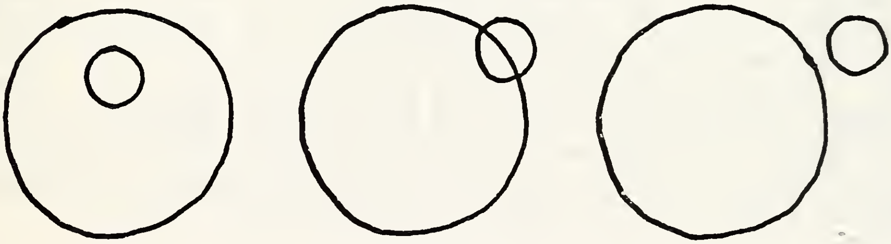

Figure 9

Piaget and Inhelder have conducted many studies looking into children's spatial concepts. Laurendeau and Pinard (1970) undertook the task of replicating some of Piaget and Inhelder's experiments on the development of space. However, experiments were conducted in an experimental context rather than the method clinic approach initially used by Piaget and Inhelder. To accomplish experimental testing required the standardization of test materials and of the testing conditions. Also, subjects were representative of the general population. Laurendeau and Pinard felt that results generated from a more rigorous experimental design would permit a more critical evaluation of Piaget and Inhelder's general conclusion. In addition there was the advantage of providing normative data to analyze the behavior of children in a series of operational tasks.

Method

Subjects. Subjects were seventy visually impaired children ages two through twelve years. There were forty boys and thirty girls.

Testing. Testing took place at the school of the child or in the home in the case of the preschool children. Testing time was five to fifteen minutes for the school age children and fifteen to forty-five minutes for the preschool children.

The test consisted of three phases. The first phase was the recognition of common objects. The child had to recognize by touch a series of eleven familiar objects, for example, a comb, scissors, cup, spoon, penny, etc., presented to him in turn behind a screen. It was possible to move the hands behind the screen. There was a second trial if the child could not answer correctly on the first trial. Phase two was the recognition of shapes of a topological character. The child held each of the figures in turn without seeing them. The child had to designate on a board which held duplicates of all the shapes, the one that he had just touched. Phase three was the recognition of shapes of a Euclidian character. Twelve geometrical shapes were matched by touch. The topological differences among the shapes were reduced to a minimum in order to determine whether the child distinguished differences primarily by metric attributes of the shape, for example, length of sides, size of angles, parallelism of lines.

Results

The major task was to determine the chronological order of the development of spatial concepts. After the recognition of common objects comes discrimination of topological relations followed by discrimination of metric relations. It was necessary to examine the errors the children made in order to answer this question. Errors were classified according to whether the figures chosen had the topological characteristics of the figure that was touched. Those errors were considered successes at the topological level. A second category was made of all the other errors.

A comparison was made between the actual responses the children made and the theoretical distribution of errors based on chance. For eight of the twelve shapes of phase two, the children made more errors which were considered topological successes than would be expected by chance. When the comparison was made by age, the visually impaired children made errors on the same basis as the normal children made errors. After age five the comparison favored the responses at the topological level.

TABLE 1

		Distribution					
		Actual		Theoretical			
Figure touched	Total errors	Topological successes	Topological errors	Topological successes	Topological errors	P.	Signi.
Square	11	7	4	3	8	.27	.0118*
Disk (1 hole)	20	0	20	2	19	.09	
Closed ring	21	8	13	2	19	.09	.0002*
Irregular cross	42	34	8	15	21	.36	.0000*
Triangle	22	8	14	6	16	.27	.2221
Open ring	30	19	11	11	19	.36	.0021*
Rectangle	12	3	9	3	9	.27	.6686
Circle	18	0	18	5	13	.27	.0000*
Greek cross	34	25	9	12	22	.36	.0000*
Open rectangle	16	9	7	6	10	.36	.0791
4-cornered star	26	14	7	9	17	.36	.0476*
Disk (2 hole)	29	0	29	0	29		

*Significant at P = .05

TABLE 2

		Distribution			
		Actual			
Age	Total errors	Topological successes	Topological errors	P.	Significance
12	13	3	8	.25	.6093
11	5	5	0	.36	.0060*
10	22	9	13	.24	.0595
9	19	13	6	.29	.0004*
8	23	17	6	.29	.0000*
7	15	10	5	.25	.0007*
6	22	9	13	.27	.1119
5	66	22	44	.25	.1810
4	40	21	19	.27	.0005*
3	38	12	26	.22	.1119
2	20	11	9	.24	.0000*

*Significant at P = .05

The results are still preliminary at this time. Further analysis of the data will determine differences between children with useable vision and children without useable vision or differences between children with a congenital vision loss and those with a vision loss occurring later in life.

Conclusions

A major task of classroom teachers is to provide experiences for the child which enhance intellectual development. According to Piaget it is only through thinking at a high level that intellectual growth occurs. If a problem is too difficult, the child responds by either ignoring the problem or turning the problem into a different problem which he can handle. Learning then becomes a matter of rote learning facts which should be learned with understanding. The teacher must be able to evaluate the level of conceptual development of the child in order to plan activities at the appropriately high level. Use of a tool such as the one reported allows the teacher to evaluate the level of each child's understanding of basic spatial concepts. Also, the age norms which will be generated from the results of the study will provide the teacher with a set of guidelines for planning activities. Of major importance is the demonstration that children with a vision loss and normal children develop conceptually in the same manner. This information allows the teacher to utilize data which is known about normal children's learning ability.

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COGNITIVE DEVELOPMENT OF BLIND SUBJECTS

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The project "The Development of Reasoning, Moral Judgment, and Moral Conduct in the Congenitally Blind," sponsored by The Bureau of Education for the Handicapped, served to identify major deficits in the cognitive development of blind children. Data obtained during the study indicated that when compared with sighted subjects of equivalent age and socioeconomic background, blind subjects did not differ significantly from sighted children in moral development, but did evidence delays of four to eight years in cognitive development as measured by Piagetian reasoning assessments.

Piaget's cognitive theory was chosen as a basis for the research because his approach allowed a step-by-step assessment of the development of successive intellectual modalities. The theory stresses the "active role" the child must play in organizing his environment. For Piaget, intellectual development involves the formulation and description of coherent and meaningful stages which reflect the direction and course of mental development. Intelligence is a process of adaptation and organization. The two processes of adaptation suggested by Piaget are assimilation, which involves the incorporation of the environment into present patterns of behavior, and accommodation, which involves the change in intellectual structures or schemas. This change is necessary to adjust to the demands which the external environment makes on the individual.

The theory of cognitive development posited by Piaget and Inhelder has made major contributions to the analysis of the development of reasoning and has provided ingenious methods to assess these processes (Piaget, 1928; Piaget & Inhelder, 1941).

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Through research Piaget (1960; 1962) has established that cognitive development proceeds through a hierarchical sequence of stages. As a child inwardly organizes or assimilates and outwardly copes with or accommodates to environmental experiences, thought is elaborated and organized (Stephens, 1972). Change from a reflexive to an inventive organism is defined by four hierarchical stages: sensory-motor, preoperational, concrete operational, and formal.

Sensory disturbance unique to those born blind hampers development of sensory-motor schemas from the outset and slows down general coordination as well as "concepts and behavior patterns essential to later successful school performances (Taylor, 1973, p. 159)." Since the blind are retarded in the acquisition of operations which precede reasoning, it is anticipated that they will be retarded in their achievement of operational processes which characterize the third stage of cognitive development, the concrete stage (Stephens, 1972).

Loss of vision results in three basic limitations according to Lowenfeld (1973): (1) range and variety of experiences, (2) mobility, and (3) interaction with the environment. These, in turn, place a child at a disadvantage in the areas of sensory stimulation, concept formation, and communication and as a result there is need for many concrete experiences to enable him to develop knowledge of the object world. As Barraga (1973) noted, manipulation of objects enables the blind child to gain the skills in manual inspection which are imperative for cognitive development. However, since the blind child lacks one source of sensory input, his perceptual processes are deficient. Therefore, other sources of sensory input must be exploited to the maximum.

Assessment of cognitive development in the visually handicapped traditionally has relied primarily on verbal procedures. The single test most frequently used with blind clients of all ages by psychologists has been some form of the Wechsler Scales (Bauman, 1973). Yet research by Cutsforth (1932), Nolan (1960), and Harley (1963) indicated that although the blind did manipulate verbal symbols with considerable fluency, their degree of understanding in terms of object reality was significantly impaired. While the Haptic Intelligence Scale (Schurrager & Schurrager, 1964) represented a noteworthy attempt to develop a performance test for the blind, it did not evolve from a specific theory of development. By contrast the adapted Piagetian reasoning assessments (Simpkins & Stephens, 1970) for use with the blind and used in this present study, provide means for assessing operational thought or "thought in action" for subjects from age six onward. Research by Hatwell (1966) and the present investigators has provided proof that blind children can be assessed with Piagetian measures. These studies demonstrated that the blind student had serious retardation when he was compared with sighted, regardless of whether the sighted employed visual perception as in the present study or visual or tactual perception as in the Hatwell (1966) study.

Studies of conservation in the blind (Miller, 1969; Gottesman, 1971, 1973; Tobin, 1972) found the same hierarchical stages of Piagetian reasoning in blind subjects as in their sighted peers, but development was delayed. Three variables significantly related to performance on "conservation tasks" were identified in a study by Brekke, Williams, and Tait (in press); these were age, sex, and blind living at home versus blind living in an institution. Studies of classification and seriation skills using Piagetian theory as the bases were conducted by Friedman and Pasnak (1973a; 1973b) and Higgins (1973). Both blind and sighted children improved with age, but in general, the sighted performed more adequately. As a result, Higgins (1973) concluded that the blind child is more handicapped in obtaining data from his surroundings. This also supports findings of Kephart, Kephart & Schwartz (1974), Boldt (1969), Juurmaa (1967), and Zweilbelson & Barg (1967). Spatial imagery has been an additional area examined by Piagetian measures. Since blindness limits the individual's spatial perception, it may be anticipated that a blind child would experience difficulty in this area of intellectual functioning. Studies by Swallow and Poulsen (1972) and Swallow (1973) have assessed a child's concept of space in visually limited children (within the visual acuity range of 20/70 to 20/400). As a result, Swallow (1973) concluded that "...lack of sufficient physical encounters is probably more detrimental than the loss of vision (p. 69)."

The present study is the first attempt known to systematically and extensively apply Piagetian theory of cognitive development to the congenitally blind. The research sought to provide answers to questions regarding the functioning of blind children when compared with sighted peers. It is anticipated that the data obtained may serve as a research base for developing educational programs for visually impaired children designed to promote cognitive development.

Methodology

Population and Sample. The sample (N=150) was composed of 75 sighted (IQ 90-110) male and female subjects, and 75 congenitally blind persons (IQ 90-110) male and female subjects. IQ was determined by the WISC or WAIS Verbal for both sighted and blind subjects. The congenitally blind had no functional vision, i.e., light perception or less. Multiply-handicapped children were not included in the sample. The two subsamples, blind and sighted, were divided into cross-sectional samples of three age ranges: chronological age (CA 6-10, CA 10-14, and CA 14-18).

Due to the strict screening criteria and the limited number of children with severe visual deficits, the blind sample was obtained in eight states including both public and private residential and day school programs.

Description of Setting. Sighted subjects used in the present study were those used previously by Stephens, Miller, and McLaughlin (1969). These subjects were randomly drawn from public schools in the Bucks, Montgomery, and Philadelphia County School Systems in Pennsylvania. Measures of socio-economic status revealed the sample to be upper-lower and lower-middle class. Assessment was conducted in a specially designed mobile laboratory which contained two testing cubicles equipped with one-way viewing screens.

Blind subjects were randomly selected from eight Eastern states and were enrolled in both public and private residential and day school programs. Measures of socio-economic status revealed the sample to be upper-lower class. Assessment was conducted in the child's school.

Description of Variables. Reasoning experiments previously used (Stephens et al., 1969; Stephens, 1972) with the sighted samples were chosen for the present study. These included experiments of conservation, of elementary logic-classification, of operativity and symbolic imagery, and of formal operations. Adaptations of these instruments for the blind were used in a pilot study carried out at Overbrook School for the Blind and Temple University (Simpkins & Stephens, 1970). In these experiments the subject was presented with a problem which involved manipulation of objects. Prior to the administration of any experiments, the subject was administered a measure to evaluate and promote his understanding of relational terms, as "more," "less," "same," "different," "bigger," and "less" (Griffiths et al., 1967). The following steps were involved in administration of the assessments:

1. Opportunity was provided the subject to become familiar with the experimental materials.

2. The experimenter noted whether the child indicated initial equality of comparison objects in conservation tasks.

3. After each transformation, the child judged equality or inequality of the objects.

4. After each question of judgment, the child was asked to explain his answer ("Why?," "Tell me more," "How do you know that?," etc.).

Ten assessments of conservation were administered each subject. In an effort to prevent establishment of a response set, two similar experiments (for example, Conservation of Substance and Conservation of Weight) were not administered successively. A description of the assessments follow:

1. Conservation of Substance: After the child agreed that two 6" balls had the same amount of clay, the child successively transformed one ball into a "hot dog," "a pancake," and into a dozen small pieces. In each case, the child compared the amount of clay in the transformed ball with that in the unchanged ball.

2. Conservation of Volume: After the child agreed to the equality of two clay balls and the equality of two beakers of water, one clay ball was successively transformed by the child into a "hot dog," "pancake," and a "dozen pieces." Then the child was asked whether the water levels in the beakers would remain the same if the transformed ball was placed in one beaker and the non-transformed ball in the other. In the second part of the experiment a metal ball of the same volume replaced one of the clay balls.

3. Conservation of Weight: Two clay balls of equal weight were placed on a scale. After the child agreed to their equality, the child transformed one clay ball to a "hot dog," "pancake," and a "dozen pieces." In this instance, the child judged the weight rather than the size of the transformed ball.

4. Conservation of Length: After two rods of equal length were placed parallel to each other, the child placed both hands on top of the rods in order to observe the movement as the examiner moved one rod four inches to the right, and then four inches to

the left. Finally, both rods were moved simultaneously, one four inches to the right and the other, four inches to the left. After each shift the child was asked if the rods were the same length.

5. Conservation of Length - Rod Sections: Four rods, each four inches long, were compared to one 16-inch rod. The transformations consisted of placing the four small rods in various shapes.

6. Conservation of Liquids: Two identical beakers were filled with equal amounts of water. After the child agreed to their equality, he poured the content of one beaker (with the assistance of the examiner, if necessary) successively into a tall cylinder, a short flat beaker, and four small beakers of equal size. After each transfer, the child was asked whether the containers had the same amount of water.

7. Dissolution of Sugar: The child weighed two identical beakers of water and two sugar cubes to establish equality of weight and establish equality of water levels. One sugar cube was dissolved by the subject while the other remained on the table for his use. The child was asked: (1) if the two beakers still weighed the same; (2) if, when dissolved, there was as much sugar in the water as there had been in the cube; and (3) if the water levels in the two beakers remained the same.

8. Dissociation of Notions of Weight and Volume: After the child agreed that two identical beakers contained the same amount of water, cylinders varying in weight and material, but of equivalent size, were placed in each beaker. Prior to each immersion, the child was asked to predict whether the water levels would remain the same. In a further task, a large cylinder was placed in one beaker and the subject was requested to select the cylinder or cylinders which, when placed in the other beaker, would cause the water in the second to rise to the same height as in the first.

9. One for One Exchange: The child was given eight dimes and instructed to exchange a dime for each package he bought from a collection of 12 packages. He was then asked whether he had the same number of packages as the experimenter had dimes. Later the roles (shopper, grocer) were reversed and the child was asked if he could purchase all the items on the table with the money he had.

10. Term to Term Correspondence: Original materials consisted of nine eggs and nine egg cups. In order to make the materials more manageable tactually, checkers were substituted for egg cups and poker chips for the eggs. The subject was requested to put a poker chip in front of each checker. After he agreed that there were the same number of checkers as poker chips, the examiner guided the child's hands as he placed the poker chips closer together. Later the poker chips were returned to their original position and the checkers moved closer together. Immediately following each transformation, the child was asked whether there were as many checkers as poker chips.

Logic-Classification Tasks

11. Classification: Original task requirements were to sort a set of 17 pictures into three related piles (ducks, birds, and animals). After the initial classification, the subject was questioned on class inclusion and possible class extension. The adapted measure involved real food rather than pictures and the child was requested to sort three piles containing apples, fruits, and foods on which the child was questioned.

12. Class Inclusion - Beads: A box containing ten wooden beads, eight of which were round and two of which were square was used. The child chose a name for each shape and his attention was drawn to the fact that all the beads were made of wood. The subject was required to judge whether there were more wooden beads or more square beads.

13. Changing Criterion: Twenty cardboard geometric figures which consisted of ten round, ten square; ten large, ten small; ten red, ten blue figures; were to be sorted into two stacks based on one criterion. After the subject explained his classification, he was encouraged to sort on another criterion. The procedure was repeated for a total of three sorts. The adapted measures substituted ten sandpaper figures for ten blue figures, and ten smooth figures for the ten red figures.

14. Intersection of Classes: Original materials consisted of two rows of pictures being presented. One row contained pictures of an identical object but in different colors. The other row contained pictures of different objects but identical in color. The adapted materials consisted of two rows of cardboard: one row with four wooden cutouts of different shapes, but same

texture; the other row contained four wooden cutouts, all the same shape but with different textures. Instructions were to choose a piece from an assorted array to place at the intersection of the two rows which would relate appropriately to both rows. Textures used were those found most highly discriminable in a study by Nolan & Morris(1971).

Operativity and Symbolic Imagery Tasks

15. Rotation of Squares: In the original tasks, the subject was required to draw the anticipated rotations of two cardboard squares, one red and one blue, which were mounted on a board. In the second procedure, the subject was asked to select one drawing which represented the way the red squares would appear at a specific position as it was rotated clockwise around a fixed point. In the adapted task, the red square was replaced by a sandpaper-covered square on the model and the model pictures. In the adapted task, since no acceptable method was found to adapt the drawing of anticipated rotations, that part of the subtest was eliminated.

16. Rotation of Beads: Three different colored beads mounted on a stiff wire were exhibited. After the beads were placed in a tube, the tube was rotated. The task was to judge which of the three beads would emerge first from the tube. The adapted measure used three beads differing in shape and texture mounted on a stiff wire which were tactually examined by the subject and given names. The subject assisted in placing the beads in the tube and followed the rotations of the tube by placing his hands on the examiner's hands as the examiner rotated the tube 180° to the right, 180° to the left and then 360° right and 360° left. The task was to judge which of the three shaped beads would emerge first from the tube.

17. Transfer from Two to Three Dimensions: An irregularly shaped cardboard frame was produced which had a thumb tack in the center portion. The subject was requested to place a button in exactly the same spot on an identically shaped board. Spaghetti was provided to serve as an improvised measuring device. Additional stimuli consisted of rectangular and oval shaped boards. A final task required the subject to place a ball inside a wooden box-type frame in exactly the same spot occupied by a ball in an identical wooden box-type frame. No adaptation was made for blind subjects.

18. Changing Perspectives - Mobile and Stationary: A cardboard tower, house, and tree were placed in specified positions on a table. After the subjects had moved to eight consecutive positions around the table, raised line drawings of the eight perspectives were used to depict each perspective. The subject was required to find the drawing which represented the complex when viewed from these perspectives. In the second part, the child was asked where he would have to go in order to "see" the perspective corresponding to a drawing shown him.

Formal Operations

19. Combination of Liquids: Five identical bottles of colorless liquids were placed on the table. The subject was told his task was to find bottles which, when mixed together, would produce a red color. When he used the correct combination of bottles, the subject was informed he had obtained the color.

Results

Mean IQ for sighted subjects (N=75) was 98.81 on The Verbal Scale; for blind subjects (N=75) Verbal IQ was 100.64. Mean CA for sighted was 143 months and for blind was 144 months.

Analysis of variance techniques were used to determine if significant differences existed between the blind and sighted groups on scores for the reasoning measures. The results indicated significant differences for each comparison favoring the sighted except on four measures of lower level reasoning tasks where near perfect scores were obtained by both sighted and blind subjects and in combination of liquids in which neither group attained the maximum scores. Therefore, no significant differences existed.

In general, there were few significant differences in the three age groups of blind subjects when performance of blind subjects CA 6-10 was compared with that of blind subjects CA 10-14 but significant differences were revealed on 20 of the 26 variables when comparison was made between CA 6-10 and CA 14-18. These data serve to suggest that although little change can be ascertained in the early years, growth of cognitive structures is taking place at a slow rate. In contrast, the sighted age groups revealed significant growth between CA 6-10 and CA 10-14 age ranges. Comparisons across groups of older blind (CA 14-18) with younger sighted (CA 6-10) subjects indicated few significant differences. This suggested an average lag of eight years for blind subjects with the exception of conservation of volume where the sighted subjects surpassed the performance of the blind subjects indicating an even greater lag.

Analyses of covariance were computed to determine the effects of chronological age and mental age on the 26 reasoning variables. When both CA and MA were partialled out, significant differences between the blind and sighted subjects existed on 19 out of 26 variables, all favoring the sighted.

Factor analytic techniques were employed to determine whether reasoning and psycho-educational variables could be reduced to a smaller number of common factors and thereby determine the basic cognitive patterns or relationships among these variables for blind children and for sighted children. Of the ten factors obtained for the blind subjects, four were defined solely by Piagetian measures, two, exclusively by Wechsler Verbal (WISC) and Wide Range Achievement Test (WRAT) subscores, and four, by combinations of the WISC Verbal, WRAT, and Piagetian reasoning measures.

Implications and Conclusions

The study has attempted to assess and identify patterns of cognitive development in congenitally blind subjects in comparison with sighted subjects. Results have served to indicate that severe deficits exist in the cognitive functioning of the congenitally blind as defined by Piagetian reasoning measures. Piaget has emphasized the need to provide the child with opportunities for experience commensurate with his level of cognitive functioning, and then, to let the child do the experiencing. This suggestion is particularly applicable to blind children of average intelligence since they generally have the potential but not the type or quality of environmental interaction experiences required for normal development of logical reasoning. Therefore, the need exists presently to provide blind children with appropriate opportunities to reason in ongoing Piagetian based situations in order to determine whether the cognitive development of blind children can be significantly improved through educational intervention. The type and quality of environmental interaction patterns that support and lead to cognitive growth need to be identified and incorporated into our educational systems.

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NEW DIRECTIONS IN SERVICES FOR YOUNG VISUALLY HANDICAPPED CHILDREN

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The importance of the early years in the development of visually impaired children has long been recognized. The basic foundations of trust in people, self-confidence, the ability to move and explore the environment, receptivity to new experiences, so necessary for normal development, are built in the first few years. It is in this crucial period that parents require positive support and help to gain confidence in their own ability to provide a home environment and experiences which will nurture their child's growth and to locate appropriate educational and therapeutic programs. It was the recognition of this need, and the large number of babies blind as a result of oxygen therapy in the late 40s and early 50s, that was responsible for the creation of a visiting service for visually impaired preschool children and their families in southern California, first under the auspices of the School for the Blind, later transferred to the State Department of Education. In Northern California, a private organization, the Blind Babies Foundation of the Variety Club, performs a similar function.

In 1971, due to cuts in the education budget, preschool services for blind children were eliminated, then reinstated in 1973. After a two-year hiatus, it has been a most interesting experience to return to the same field, and to note the changes that have occurred, both in the population of young visually impaired children, and in programs offered in local communities.

When the service for preschool visually impaired children was reinstated, thought was given to how a small staff, covering a large geographic area, could direct its efforts to provide more effective assistance to children and their families. Our first task was to identify the population, the second, to develop a system of cooperation with local school districts, nursery schools and other public and private agencies, in order to make the needs for service known, and to help to promote educational programs in the communities in which the children reside. We have been guided by the philosophy of the Master Plan for Special Education in California which states the importance of early identification of handicapped children, the necessity for considering each child as an individual and developing appropriate educational strategies to meet his or her needs, and, wherever possible, to integrate the child into the mainstream of education.

Letters of notification were sent to school districts, pediatricians and ophthalmologists, public health agencies and hospitals, as well as to parents whom we had served previously. The original plan was to spend at least three months in case-finding, but we were soon inundated with requests for service. At the present time, we are in contact with 161 legally blind children.

Since our staff is composed of two educational advisors, soon to be augmented by a third person, it has been necessary to develop a system of priorities. First priority is given to new referrals. As soon as a referral comes into our office, the family is contacted by telephone or letter, and an appointment is made for a home visit. At this first visit we become acquainted with the child and the family, assess the needs, and, based upon these needs, develop with the family an initial plan or program for the child. During this first visit, we discuss the educational program for visually handicapped children provided in the community. It is surprising how many families are unaware that their child can receive a free public education close to home. Wherever possible, we attempt to find a community program in which the child can be enrolled. This may be a nursery school, an infant program which offers environmental stimulation, a public preschool program, Head Start, etc. Suggestions are made for activities that can be carried out at home. If the child needs medical services or therapy, and is not known to the Public Health department, with the parent's permission we report the child to the health department so that a public health nurse will be assigned to assist in making these arrangements. The names of all new children are sent to the local school districts in order to keep them informed of program needs.

The second priority is continuing home visits to families with whom we have established relations, offering on-going guidance. The frequency of visits will depend upon individual needs with priority given to very young children and to children for whom no programs are available. Since a large part of our efforts are devoted to finding appropriate community programs, our third priority is working with these programs in a consultative capacity. This is a particularly important facet of our work, since many programs have never had the experience of working with a visually impaired child but will undertake the challenge if they can be assured of support through visits, consultation and inservice training to staff. During the past year our staff has provided inservice training to Head Start programs, private nursery schools, public health nurses, counselors at Regional Centers for Developmental Disabilities, occupational and physical therapists, and in one instance, to the medical staff of a neonatal intensive care unit. Where children known to us are enrolled in public school programs, we often serve as a bridge between home and school, helping parents and teachers develop more awareness and insight into each others' needs.

In referring children to educational programs we discuss with parents the available alternatives, the pros and cons of different kinds of programs, so that parents can make their own choice. For example, the choice may be between a nursery school for visually handicapped children or a nursery school which integrates a few handicapped children into the sighted population. We suggest that parents visit both programs and choose the one they feel most appropriate. If the parent wishes we will accompany them on these visits. Too often parents of handicapped children are dictated to by professionals, and again too often, many professionals will give conflicting advice which only contributes to parental feelings of inadequacy and confusion. We believe that our role as educational advisors is to help parents become more adequate and secure in their role as decision-makers. Some families whom we visit are involved with many professionals, social workers, nurses, therapists, teachers. Wherever possible we establish contact with all the people involved and try to agree upon a common plan of action, and attempt to define each professional's role and responsibility. It is not always an easy task to develop an interdisciplinary approach, but it is essential to make the effort to avoid the fragmentation and discontinuity of services which can occur when many disciplines are involved with one family.

Our population ranges from birth to six years of age. This year we have received more referrals for children under two years of age than ever before, reflecting growing sophistication to the importance of early intervention.

The children are enrolled in the following programs: 15 in infant programs, 17 in private nursery schools, 4 in residential nurseries, 3 in parent participation nursery schools, 24 in public preschool classes for visually impaired, 7 in kindergartens with visually handicapped resource rooms, 8 in public school multihandicapped classes, 13 in Development Centers for Handicapped Minors, 4 in deaf and hard of hearing programs, 1 in a speech and language clinic, 5 in Head Start, and 2 in United Cerebral Palsy nurseries. Four children are receiving home services from itinerant teachers. Twenty-five of the younger deaf-blind children with whom we maintain some contact are enrolled in deaf-blind classes. Approximately 78% of the children known to our services are attending an educational program in their own community, ranging from one to five days a week. This represents a sizeable increase in the number of young blind or partially sighted children receiving educational services within the past few years. The most dramatic change has been the organization of classes for multihandicapped blind and deaf-blind children and the growth of infant programs, the majority of which were designed originally for retarded children but now are including children with many kinds of developmental disabilities.

The distribution of causes of blindness in our population is as follows: blind multihandicapped, excluding deaf-blind - 32; RLF - 22; optic nerve disorders - 22; bilateral cataracts - 13; congenital blindness, etiology unknown - 8; albinism - 6; retinoblastoma - 5; anophthalmia - 5; aniridia - 4; glaucoma - 4; severe myopia - 3; other causes - 13. Maternal rubella is the major etiological factor in the deaf-blind children population. Three important trends emerge from these statistics. One is the growth of the RLF population. Contrary to expectations, RLF is not disappearing. The majority of the RLF children we are seeing are under four years of age and were very low birth-weight premature babies. Most of these children were born in well-equipped modern hospitals and received superior medical supervision. In fact, it is the excellence of this care which accounts for the large number of RLF children, for the majority of these babies would have died under less favorable circumstances. The second trend is the continued growth of the multihandicapped blind population. Most of the deaf-blind children are now five years of age or older. We are receiving very few new referrals of deaf-blind rubella children and do not expect a reversal of this trend.

There is no way of ascertaining whether our population represents a significant number of the preschool visually impaired children in Southern California. There is no mandatory system of reporting, and while we make an effort to reach out in the communities through making our services known to other agencies, this is somewhat haphazard. There a few private agencies serving blind children who do their own case-finding and offer their own services. We suspect that there are visually impaired children, particularly in poor communities, in rural areas, and in communities of Mexican-American concentration where Spanish is the predominant language, who are receiving no services of any kind. Mandatory reporting of handicapped babies by hospital and physicians and a well-organized system of vision screening for preschool children in public health clinics, designated neighborhood centers, or mobile units in rural areas, is still an unresolved need. Much remains to be done in making services, literature, and taped materials available to Spanish-speaking families. Through the cooperation of the Clearinghouse Depository in the State Department of Education, a small project has been undertaken to produce some of these materials.

While the problems, concerns and needs of parents of visually impaired children remain constant, we have noted some subtle but important changes in attitudes. One is the greater involvement of fathers. This year I have seen many fathers on my home visits. This can be attributed in part to the increased sharing of responsibility for the care of children that is an outgrowth of the women's movement. A larger percentage of children are living with their natural parents, even in single parent families. As programs expand, particularly for the multihandicapped, there is less pressure to institutionalize children at an early age. More parents are seeking and receiving genetic counseling. This service, offered through public health clinics as well as hospitals, should be available to all parents of handicapped children.

Although services for young visually impaired children have increased, much remains to be done, particularly in the area of giving early and timely assistance to families. The birth of a handicapped child is a traumatic event to both mothers and fathers. Before a mother leaves the hospital, bedside counseling should be provided, as well as the names and addresses of appropriate resources for followup assistance.

Most of the children we see receive good pediatric and ophthalmological care, but physicians generally are too busy to answer questions that are not concerned with medical issues. The responsibility for guiding parents in the area of child growth and development remains the responsibility of educators.

With the proliferation of early childhood programs, many teachers whose training was geared towards an older population will need to be re-trained with special emphasis upon child growth and development and working with families, as well as the organization of curriculum for the very young child. This is a matter of concern not only for special education departments in colleges and universities, but for school districts as well, in planning inservice education for staff. We have found that some teachers working with preschool visually handicapped children have benefited greatly from visits to other kinds of early childhood programs such as nursery schools, child care centers, and Head Start. With the trend towards greater integration of handicapped and nonhandicapped children, inservice education for the regular classroom teacher in the special needs of the visually impaired child is equally important.

While the debate continues in some educational circles as to the merits of integrated vs. segregated programs for visually impaired children, in many ways the topic is simplistic and skirts the real issues. The important question is how to design programs that provide a continuum of services so that each child can receive the kind of education best suited to his or her needs, with enough flexibility built into the system to allow for change.

Our experience with very young children has been that special preschool classes for visually impaired children are most profitable for the child whose development is at the level where he needs a highly structured program with intensive adult assistance. The emphasis in these classes is on gross motor skills, language development, visual training for low-vision children, self-concept, socialization and self-help skills. The child's overall development, rather than the visual status, is the most significant factor in the selection of a program, since some of our totally blind children have benefited from a regular nursery school where there are more opportunities for complex peer relationships and enriched play experiences.

Since all children, no matter how handicapped, benefit from some interaction with a normal peer group, perhaps we should consider the idea of housing many kinds of early childhood programs together on a campus designed for young children, where play areas can be shared and where children, as they are able, can move easily into new groupings. The value for all children, handicapped and nonhandicapped alike, of gaining through mutual interaction the important concepts of respect, friendship, and caring for one another, cannot be overestimated.

Those of us responsible for providing services to young children must always be alert to new trends, improvements in technology, developments in the fields of medicine, psychology and the allied professions. Through planning, interchange of ideas and experiences, research and experimentation, we will find the new directions necessary for improving the quality of our services.

COGNITIVE CHARACTERISTICS OF THE PRE-SCHOOL CHILD

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Gradually, in the course of development of the baby, his knowledge of the world and his actions upon the world become internalized and are represented in thought. By the age of two, the child can respond to an object in the absence of direct sensory stimulation from that object. This implies he has some mental image. We see this reflected in his make-believe play. For example, when a child picks up a branch and starts sweeping the walk, we know that he has the mental image of some object and some prior event. Whereas a developmentally younger child could sweep only if a model of a sweeper were present, the two year old can imitate on a deferred basis. In a development assessment of this child, we would say he has domestic mimicry, has deferred imitation and because he uses a branch to represent a broom, he has the use of ludic-symbolism. The presence of these symbolic forms of thinking indicate that the child is beginning what Piaget called the pre-operational period of intellectual development which will last for about five more years.

Two features characterize the child's thinking during the pre-school years. One is the development of make-believe or symbolic play and the other is the child's attempt at verbal reasoning. The though processes of the pre-operational stage differ not only quantitatively from that of the older child but qualitatively, as well. The pre-operational child does not have the complex mental operations of the older child. We see the pre-conceptual nature of this stage when the pre-school child attempts to reason logically.

In logic, a differentiation is made between deductive and inductive logic (Phillips,1969, p. 42). Deduction is usually characterized as a process of reasoning from the general to the particular. For example, ALL CHILDREN LIKE TO PLAY. JOHNNY IS A CHILD. THEREFORE, JOHNNY LIKES TO PLAY. Induction is considered a method of reasoning from the particular to the general. CHILDREN WE KNOW LIKE TO PLAY, THEREFORE ALL CHILDREN LIKE TO PLAY. The child doesn't use either deductive or inductive logic. His reasoning lies somewhere in between. He reasons from the particular to the particular. He has what Piaget calls transductive logic. His *transductive reasoning* sees a relationship between two particular items where there is none. For example:

Experience:	When Aunt Molly came over, it rained.
Logic:	Everytime it rains, Aunt Molly will come over.
Experience:	I have a nap every afternoon.
Logic:	I haven't had my nap, so it isn't afternoon.

These attempts at verbal reasoning are pre-conceptual in nature; the erroneous conclusions arise from the child's lack of understanding of general class concepts.

Another characteristic of pre-operational thought is that events are reasoned and judged by their *outward* appearance even though logic shows the truth to be otherwise. The classic example includes two balls of clay.

> Example: Given two equal balls of clay, the child is asked to roll one into a sausage. When he is asked if there is more clay in one or if they are the same, the young child will respond there is more clay in one or the other.

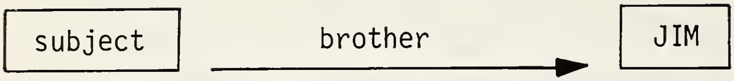
Logically, the amount must be the same because they started the same, but the child is *perceptually bound* and makes judgments based on how things *look*. He has not yet developed the logic to indicate another possibility.

A third characteristic hindering the pre-operational child from correct logical judgment is that he does not have *reversibility* of thought. His focus is on the end product of his thought process; he cannot go back to the initial part and reconsider those variables. His processes are sequential, not simultaneous.

> Example: A four year old boy is asked:
>
> "Do you have a brother?" He says, "Yes."

"What's his name?" "Jim."

"Does Jim have a brother?" "No."



(Phillips, 1969, p. 61)

The relationship is one-way; it is irreversible.

In terms of the sausage experiment, even though the transformation is done right before his eyes, the child responds to the end result. His thinking cannot reverse itself back to the place of origin where he started with two *equal* balls of clay.

Another characteristic is that the child cannot handle *two changes* at the same time. In the forming of the clay sausage, the child cannot think simultaneously about the changes in thickness and length. He lacks the logical operation that would enable him to see that an increase in length is compensated for by a decrease in thickness. His particular answer will depend on whichever dimension has caught his attention. The child at this stage tends to center his attention on only one aspect of the event, either the thickness or length, and cannot shift to the other aspect. If his attention is centered on the thickness, he may answer that the ball has more clay. If his attention is centered on the length (which is the more common response), then the child will respond that the sausage has more clay. The cognitive task of the preschool is to provide the foundation for the eventual emergence of logic, where the child is no longer bound by his perceptions, where he can shift his attention to more than one aspect and where he can reverse his thinking process to the origin of the thought.

To accomplish this the child needs a variety of experiences which will allow him to discover properties of objects and events and relationships between objects and events.

Children need opportunities for the development of what Piaget calls *physical knowledge*. Through physically experiencing an object or situation, the child abstracts information. The feedback from the event helps the child build a mental representation of those experiences. Through a variety of experiences, the child builds an image abstracted from the properties of the many acts. This is the basis of concept formation.

The child through acting on an object also builds a *strategy* for acting on other objects. Once the child has developed such strategies, he will know how to find out the physical nature of unfamiliar objects.

Handicapped children with conceptual difficulties need to experience primary relationships in the physical world on a *daily* basis before they are able to abstract information about their world. The teacher may have to demonstrate and/or help the child *live* the experience and develop the strategies. She extends experiences by providing verbal labels for these relationships.

> Example: "Jane is climbing *up* the slide. Now Jane is coming *down*" or "Reach *up* and pick a leaf . . . Let's sit *down* and look at it."

> Example: The teacher can ask the children whether or not the milk carton is empty and how can we find out.

> Example: The teacher can ask what happens if the glass if filled too full, where will the milk go? Why?

Note from these examples that the teacher is helping the child discover the nature of physical objects as well as develop strategies for discovery. Children can predict answers and act upon the objects to discover the possibilities.

However, Piaget delineates another essential kind of experience which plays a necessary role at the pre-operational level. This second type of experience Piaget refers to as *logico-mathematical*. In logico-mathematical knowledge the important aspect is the *relationship* between and among objects. This relationship must be constructed by the child; it is not inherent in the objects themselves. Logico-mathematical knowledge is derived action on the objects rather than from the objects themselves. For example: Through *acting* on objects the child discovers that the sum of objects is independent of their spatial distribution and independent of the order in which they are counted.

Piaget delineates three areas of logico-mathematical knowledge: classification, seriation and number.

Classification requires the ability to see similarities and differences between objects and to group them accordingly. These skills develop naturally as the child attempts to mentally organize his world. The typical three year old will start to group the red squares from the blue squares and circles, but somewhere along the line he loses the idea and begins to make the whole thing into something, like a tower, circle etc. The collection itself becomes a figure in space. These figural collections seem to show the child's thinking lies midway between his notion of the object and that of the class (Inhelder, 1970, p. 29).

Another typical three year old response sees a shift of orientation as the task of sorting progresses, i.e., the child starts with red squares, then shifts his response to red circles and then perhaps to blue circles. He has lost his primary class notion of red squares. One response serves as a stimulus for the next, rather than each response fitting into a preconceived plan (Lavatelli, 1973, p. 85).

As the child matures (4-5 years) he is able to stick with the initial criterion and sort out all the red squares. However, in looking at the group of objects as a whole the child does not have a stable concept of class comprehension. When given a group of red and blue squares, the child can group them on the basis of similarities. However, if asked if there are more square pieces or more blue pieces, the child will respond blue. The pre-operational child cannot think simultaneously of a smaller class of blue squares and larger class of red and blue squares.

According to a classification system, the class of squares is part of the system that includes red ones and blue ones, but the pre-operational child does not see this. He can center only one aspect (color in this case), and cannot shift simultaneously to another dimension (that of shape). He cannot reverse his thinking to the starting point of a group of squares and he uses transductive reasoning, i.e., he doesn't move from the part to whole (Phillips, 1969, p. 80).

The pre-school task is twofold: (1) to provide opportunities for the child to group according to similarities and separate according to differences, and (2) to provide opportunities for the child to develop mobility of thought, so that he may see various ways of grouping (Kamii, 1973, p. 217).

> Example: After the child groups red, blue, small, large, circles and squares in one manner, the teacher can ask the child if he can find another way to sort them.

Note that the teacher is allowing the child to abstract the common property on his own. The child must act upon the objects himself in order to build logico-mathematical knowledge. If the teacher abstracts the common property and says, "Find all the red squares," it becomes a perceptual recall task.

Seriation, a second logico-mathematical structure, involves the ability to arrange objects in a series according to some specific order. Whereas a classification task requires the child to separate objects that are different, the seriation task requires the child to order them according to their relative difference.

The three year old has not incorporated the idea of fixed order of a pre-seriation task even on a perceptual basis. Though he can match the individual items on a clothesline, he doesn't put them on his line in the right order. Furthermore, he doesn't even see the difference between the two lines.

A true seriation task requires the child to arrange a group of objects in order according to some dimension, such as size. Piaget used ten dolls that differed in size. The young child of four years can only construct isolated pairs of dolls.

As the child matures (around 5 years) he may form a correct series through a trial and error strategy. Though he seriates the items, it is done at a pre-operational level. He does not yet have the complex mental operation of having a *system* for solving the problem, such as choosing the largest and next largest, etc.

A systematic method implies the reversibility of thought that the pre-operational child doesn't yet have. To follow a systematized strategy the child must keep in mind that the object he chooses is both smaller than the one he has chosen and larger than the ones that remain.

Merely copying a perceptual model will not develop the logico-mathematical structure of seriation. The child must *act* upon the objects himself to build the logical system. The teacher can guide discovery in the child by asking questions that will require the child to be aware of his actions, such as why did you choose that spot? Could it also go here? Why? Why not?

Number is the last area of logico-mathematical knowledge. As in the development of classification and seriation concepts, number concepts grow through a sequence of phases.

When a three year old is asked to make another row with the same number of circles as mine he will construct a row with similar end points as the model, but not regard the number in between.

Later, the child develops the pre-number concept of 1:1 correspondence. He starts thinking in terms of one for you and one for me. However, he is sure that two rows have the same number only if they are lined up one to one. If one row is spread out, the pre-operational child who is perceptually-bound and irreversible in thought maintains that the spread out row contains a greater number of circles.

The pre-school objectives for developing number includes helping the child make judgments of equivalence, "more" or "less." Such activities as table setting offer the child the opportunity to judge the equivalence of cups, saucers, napkins, cookies, spoons, forks to the tea party participants. Halfway thru the party, the children can compare the amount of cookies left.

In terms of the preschool program, the goal is not to produce pre-operational behavior, but to provide the experiences that allow the child to develop the processes of thinking which will eventually lead to logical thought (Kamii, 1973, p. 217).

It is the feedback from the child's own actions that allows for the discovery or development of physical and logico-mathematical knowledge.

The teacher can facilitate discovery by asking thought provoking questions, i.e. "Can you think of another way to do that?" and by encouraging the child to predict cause/effect relationships of his own activities. "What do you think will happen?"

One added note I wish to include is the relationship of affective growth to cognition. The child's affective life provides the energy that makes intelligence function. The quality of the experience will be determined and increased by the child's curiosity, his confidence in his own ability to figure things out, and his eagerness to approach and be approached and exchange ideas with his peers and significant adults.

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OPTACON READING IN THE PUBLIC SCHOOL

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Spanning the last three years, San Diego City Schools, with support from EHA Title V-1, has developed methods and materials for use in teaching school-age children to read with the Optacon. Initially lessons and procedures were developed as a product of teaching five braille-reading secondary students. These were modified, consolidated, and printed in the form of teachers' and students' manuals during the second year of the project. Finally, a sequence including supportive lessons was produced to meet the needs of blind students from kindergarten through sixth grade.

The Optacon

As many teachers of the visually handicapped are aware, the Optacon is a portable electronic device which produces a tactile likeness of print symbols. Weighing only four pounds, it can be carried by use of a shoulder strap, allowing the Optacon to be used in a variety of reading situations.

Learning Sequence for Secondary Students

The sequence of Optacon reading experiences developed in San Diego is outlined below. Each step is accompanied by the rationale for its particular place in the learning process.

1. Introduction to the physical aspects of the Optacon

Understanding the physical properties of the Optacon is prerequisite to learning to use the device effectively.

2. Introduction to general tactile discrimination

Because the ability to detect differences in symbols is requisite to the decoding process of reading, the first Optacon lessons teach the student to discriminate between symbols. Subsequent lessons refine this ability.

3. Introduction to alphabet in simple type style

Learning letters is a logical next step from the perceptual abilities developed in Step 2 and is one step closer to reading. A simple type font free of serifs and other complexities is selected.

The alphabet is divided into four letter groups and one group is taught at a time. Reading meaningful material is probably the greatest motivating factor in early lessons. For this reason simple words and short sentences are introduced within each letter group.

No special lesson is designed to introduce marks of punctuation; the student encounters these within the lessons for the first letter group. It is difficult to introduce these symbols in isolation since their meanings are highly dependent on the context in which they appear.

4. Checking comprehension

Comprehension can be checked periodically as the teacher interacts with the student during reading sessions. This informal technique is efficient at this time, because the student's reading rate is likely to be too slow to benefit from prepared lessons for the assessment and development of comprehension. By asking questions about what the student has just read, the teacher can determine, within acceptable limits, the student's level of comprehension. These questions should elicit responses which will show the student's ability in these areas:

Knowledge of general content
Knowledge of specific details
Recall of sequences of events

5. Introduction to tracking

Tracking is postponed until the student has become familiar with more than half of the letters of the alphabet. At this point the student is motivated to track independently because the symbols perceived as he moves the camera are now meaningful.

Tracking is introduced after the third, but before the last letter group, is learned. The relatively simple skill of moving the camera along a printed line is developed first, making use of the tracking aid. The tracking aid device holds the Optacon camera relatively steady, but allows for movement up and down or across the page. This skill is then integrated with reading skills already developed by having the student reread materials presented previously while the teacher was tracking. With the use of this sequence, many students can track independent of the tracking aid or teacher's assistance by the time the alphabet in the simple print style is learned.

6. Introduction of word attack skills and numerals

Word attack skills are introduced at this point as an important step toward independent reading. Numerals are introduced after letters in the simple type style have been learned because they are not usually essential to reading short stories which is the student's most immediate and motivating need in the early stages.

7. Developing increased reading rates using simple type style

Prior to the introduction of any new symbols, proficiency in reading with those already learned is developed. At this point in the program, the student's level of reading comprehension with the Optacon should be determined. This assessment is necessary as students at the junior and senior high school level bring to the learning situation a wide range of ability and experience in reading. Reading rates can then be improved with the student reading material at a comfortable yet challenging level.

Improved reading rates cannot be expected to be an automatic product of practice. For this reason, special instruction is required which will push the student to read at a faster rate. Immediate access to any printed material in its original form is the primary benefit of the Optacon, but increased reading rates greatly expand this usefulness. Letter recognition rate seems to be an important key to overall reading rate. Periodically, accuracy of letter recognition needs to be checked and necessary remediation taken. With accuracy assured, speed of letter recognition can be pursued.

8. Introduction to alphabet in complex style

The complex type style is introduced only when the student has shown proficiency in reading print in the simple type style. This is done to help the student maintain a continuously rapid development. This would be difficult if the student is confused by the introduction of too many unfamiliar symbols.

An effective time to introduce the complex type is the point at which the student has attained a reading rate in the simple type style of approximately 15 to 20 words per minute with an acceptable level of comprehension. The process used for developing initial skills and then increasing reading rate and comprehension with this type should be parallel to that used with simple type style.

9. Maintenance of records

Maintaining records of student progress can provide important information for future Optacon programs. Records should include:

Pre-test data

- Tactile discrimination
- Braille speed and comprehension
- General academic achievement
- Intelligence
- Attitude toward self and Optacon
- Recognition of Optacon letters

Interim data

- Logs showing--
  - Optacon reading; manipulative skills
  - Optacon reading; comprehension
  - Optacon reading; rate skills

Post-test data

- Tactile discrimination
- Braille
- Attitude toward self and Optacon

At the end of ten months and approximately sixty hours of training, students in the San Diego Project could read grade level materials on which they were to be tested at the rate of 15 to 30 words per minute. When reading recreational materials at a lower comprehension level they attained reading rates of 28 to 59 words per minute.

Learning Sequence for Elementary Students

The progression of learning activities developed for kindergarten and elementary students was produced with the understanding that the Optacon student will be learning to read along with his peers. It is quite possible, and early experiences tend to be supportive, that the young students can learn braille and the Optacon concurrently. A pre-school program could plan an important role in the expansion of the blind child's curriculum which includes both braille and Optacon reading.

The sequence for elementary skills development follows.

1. Introduction to the Optacon and a brief discussion of what it can do--not learning in detail the various components

2. Introduction to reading readiness including tactile discrimination

3. Introduction to plastic Thermoform letters

4. More complete introduction to physical aspects of the Optacon

5. Read letters and words with the Optacon, introducing these in the same sequence as used in the preprimers

6. Read first preprimer and related reading activities as the teacher tracks with the camera

7. Introduction to tracking with student using the tracking aid

8. Reread some stories as student tracks using the tracking aid

9. Student reads independently of teacher and tracking aid

10. Introduction to more advanced reading skills such as reading guide-words in glossaries

11. Introduction to teacher-made materials and test formats.

Two important differences occur between the secondary and elementary sequence. First, the introduction of letters is a matter of convenience and efficiency for secondary students. For elementary students, letters are introduced in the sequence that occurs in the preprimer series used.

Secondly, the teacher tracks for the student for a longer period of time with elementary students.

Constraints Affecting Optacon Learning

As with the development of any new instructional program, certain areas emerge as presenting more of an obstacle to the learning process than others. Some potential and realized problem areas that developed in San Diego are listed here, though not necessarily in their order of importance.

1. Motivation

Secondary students may have more of a problem maintaining a high level of interest because they have already developed alternative forms of receptive communication. It takes many long hard hours to develop a high degree of competency with the Optacon. Additionally, in the early stages, it is quite difficult to find high interest reading material written at their level of reading.

2. Support from school and parents

A supportive environment to Optacon reading needs to be established both at home and at school. The teacher of the visually handicapped needs to work closely with other teachers and with parents to help the Optacon student develop independence in using his new skills.

As students progress toward independence with the Optacon, they will be able to read in an expanding variety of personal and practical reading situations. They may become self-conscious when using the Optacon where they can be observed by their peers. Some may feel that the Optacon makes them "different," others that they will be laughed at because of their low reading rates. Each student will react differently to these early experiences, and the teacher needs to be sensitive to the individual emotional needs of each student.

At home, parents can encourage their child to read letters which have been typed, magazine articles, or printed instructions such as recipes. In the classroom the student can use his new skills in reading dittos, either original or retyped, reading short assignments in texts, in practicing vocabulary or spelling words and in a large number of other situations.

It cannot be assumed that the student will automatically read the new material which is now available to him. Patterns of dependence on others for access to print may be difficult to change. Family members and friends are likewise accustomed to reading for the blind student and must be encouraged to help him be independent in his reading habits. Additionally, the student needs to be made aware of the tremendous amount of printed information in his environment to which he now has access.

3. Slower reading rates

The Optacon student perceives one letter at a time. Through practice the recognition of letters can become almost instantaneous, greatly increasing speed. Reading rates can also be improved by anticipating the ending of a word or phrase so that many letters or words can be skipped.

4. Format

Unusual or complex print formats can present serious obstacles. Students seem to handle these more easily if they first develop a high level of competency in reading with regular formats. As the student's skills develop, the teacher can be helpful by introducing increasingly complex formats geared to help the student meet immediate reading needs such as graphs and teacher-made tests.

5. Type fonts

Some type styles are more difficult than others in the decoding process. For this reason, initial instructional materials use a type font that is as simple and free of complexities, such as serifs, as possible.

Teacher Preparation

Ideally, a prospective Optacon reading teacher should become knowledgeable and skillful in the following:

Process and techniques of teaching tactile reading
Technical and manipulative aspects of the Optacon
Various approaches to teaching Optacon reading
Methods of tailoring Optacon instruction to meet the needs of individual students

One method of teacher preparation evolved in the Spring of 1974. The decision was made to teach Optacon reading to certain blind students at the Frances Blend School in Los Angeles, California. The instructional materials developed earlier in San Diego were selected for use.

Teacher preparation, involving seven evening sessions and one school day of observation, was conducted by this writer. Skill in maintenance and use of equipment was developed at the first meeting. Each prospective teacher was afforded the opportunity for "hands on" experience with the Optacon.

Later meetings were used to develop teacher skills in using and modifying instructional materials. This on-going process proved to be effective because specific problems could be solved as they might arise.

Potential for Research

The art of teaching Optacon reading is still in its infancy. Teachers in the field have a deep need for solutions to a variety of problems relative to how students learn to read with the Optacon. Research might answer some of the following questions:

1. Specifically, why are some letters harder to learn than others?

2. Do Optacon readers "assemble" words one letter at a time, or can they read whole words?

3. What specific techniques lead to the greatest improvement in reading rates?

4. What affective factors are most important to the learning situation?

5. What instruments are the best predictors of student success in Optacon reading?

6. What reading situations are best satisfied through use of the Optacon?

7. What scope and sequence of activities produces the most rapid development of skills and independence in the Optacon reader?

Conclusion

The Optacon needs to be viewed from the perspective that it has proven itself to be an effective communication tool for blind students. Immediate access to printed material can make an important contribution to the personal, educational, and vocational independence of people who are blind.

USE OF CLOSED-CIRCUIT TELEVISION AS A LOW-VISION READING AID

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Closed-circuit television (CCTV) was first suggested for use as a low-vision reading aid by Potts, Volk and West in 1959. Their idea was that a television system could be arranged so that ordinary printed material could be greatly magnified on a television receiver to benefit those with low vision. Such a CCTV reading aid, they pointed out, would not only provide high magnification and instantaneous enlargement, but would be superior to the then available optical projection systems for two reasons: because the electronic image intensification of CCTV would provide better image contrast, and because the CCTV monitor would act as an effective light source, with the advantage of having the luminance relatively independent of the direction of the viewer.

Since then, CCTV reading aids have been made commercially available by over a half-dozen companies, and have been obtained by many people with low vision. However, few general guidelines have been made available to indicate which among low-vision people seem to benefit from the use of CCTV, in what way CCTV may be of greatest benefit, and how CCTV users employ CCTV in their daily lives. Consequently, a project to explore these concerns was initiated by Gerald E. Fonda, M.D. at the Eye Institute, Low Vision Rehabilitation Service, St. Barnabas Medical Center, Livingston, New Jersey, in conjunction with Henry Thomas, M.S., and Ronald Schnur of the New Jersey State Commission for the Blind and Visually Impaired. Since it was found that the great majority of CCTV users were students using CCTV at home or in the classroom, it was felt to be

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appropriate to present some of our findings before the Association for Education of the Visually Handicapped. Interest in CCTV reading aids was also stimulated by the work of Weed (1968) and Genensky, *et al.* (1972); interested readers are further referred to Davis, Asarkof, and Tallman (1973) and Friedman (1973).

Method

Subjects

Seventy-five people with low vision were selected for evaluation from the private practice of the project director (Fonda) and from the clientele of the New Jersey State Commission for the Blind. These people, by and large, represented all those low-vision people the project staff felt might possibly benefit from a trial exposure with the apparatus and who were willing to take part in such an evaluation. All were given thorough eye examinations. Their measured visual acuity, in the better eye with correction, ranged from roughly 1/200 to 20/200, with two-thirds of the sample having acuity less than 20/320. Ages ranged from eight to 90 years of age, with 60% of the sample being students under 24 years of age.

Apparatus

The CCTV apparatus, assembled for purposes of initial evaluation of subjects, consisted of a small television camera, equipped with a zoom lens and a close-up addition, mounted on a table-stand with the camera pointed down. This camera could pick up the image of any ordinary printed material placed on the table beneath it, and reproduce this image on a television monitor placed on the table next to the camera. The transmission of the image is through wires connecting the CCTV camera with the monitor, not by transmission of TV waves through the air; hence, the term *closed-circuit* television. The idea is that the image of the printed material can be greatly magnified on the CCTV monitor, more than by any other low-vision aid, and that the degree of this magnification may be quickly adjusted by use of the zoom feature. Our apparatus was able to produce 35x magnification, which could be increased by having the reader move very close to the CCTV monitor.

The person using CCTV is instructed to sit at the table and pass his reading material beneath the CCTV camera while reading the magnified image on the CCTV monitor. This manipulation may be a bit tricky for most readers at first; however, improvement was rapid in those people who finally obtained a CCTV aid for their use. The reading material must be held flat so that it does not go out of focus, and attention must be paid to the configuration of printed lines and columns on the page so that switching from line to line and column to column will be smooth and easy.

Procedure

This investigation was conducted in two parts. In the first part, subjects received a trial evaluation to judge the degree CCTV seemed likely to be of benefit to them, with the criteria for evaluation consisting of the degree of improvement in reading speed, reading comfort, and reading endurance over that of the user's ordinary mode of reading. Attention was also paid to the individual reactions of the reader. As a result of these evaluations, 15 people obtained CCTV for their own use. Details of this evaluation procedure have been reported previously (Fonda, Thomas, and Schnur, in press).

A second part of this investigation consisted of following the progress of the group of CCTV users. Contact was maintained within ongoing professional relationships, by field visits, and by questionnaires and telephone when personal contact was not possible. Attention was paid to the advantages and disadvantages of CCTV as they became apparent, as well as to the various users' individual mode of usage. Readers had obtained several different commercial makes of CCTV reading aids and were followed for six to 18 months after obtaining CCTV at the time of this report.

Results

The part of this investigation that bears upon recommending CCTV as a low-vision reading aid has been reported in detail (Fonda, Thomas, and Schnur, in press). However, those findings may be briefly summarized here before commenting on CCTV usage.

Those not Benefiting from CCTV

Sixty of the 75 low-vision subjects (80%) evaluated did not appear to benefit from the CCTV and did not obtain one. In descending order of frequency, the reasons for not obtaining a CCTV were as follows:

1. Relatively good vision (acuity greater than 20/400)

2. Extremely poor vision, on the order of less than 1/200, measured in the better eye with best correction

3. Preference for spectacle or other low-vision aid

4. Lack of interest or motivation; some people for whom CCTV produced improvement had little occasion to read printed material in their normal daily routine

5. Poor ability to manipulate the apparatus

6. Expense of the CCTV apparatus

No albinos appeared to benefit from CCTV.

CCTV Users

Fifteen of 75 subjects initially evaluated (20%) showed an increase in reading speed, reading comfort, or reading endurance, compared to their ordinary mode of reading, that was marked enough to warrant obtaining CCTV for their own use. Some of the characteristics of the group are noted as follows:

1. Most of this group had very low vision. Two people had visual acuity of 1/200, and seven people had visual acuity less than 5/200 in the better eye with correction. Only one person had acuity better than 20/320.

2. CCTV primarily benefited many in this group by allowing a greater ease and endurance of reading, and not by greatly increasing reading speed. This was particularly true for those whose low-vision spectacles required them to hunch over their books to read at a distance of two inches or less, producing discomfort and fatigue.

3. Eight of the 15 had not previously been able to read ordinary print with their conventional low-vision aids because improvement had been inadequate. Three were Braille users.

4. Thirteen of the 15 people were under 26 years of age. Twelve were students, and all appeared to be very highly motivated to read.

As with any low-vision aid, acceptance and use of CCTV proved to be a highly individual matter, dependent on the user's particular reading needs, reading ability, motivation, and visual functioning. Therefore, data on each subject obtaining CCTV for his own use is presented (Table 1), rather than presenting group statistics which would tend to obscure the individual differences which are the most important consideration in dealing with low vision. Several cases, in addition, are discussed near the end of this report.

Fourteen of the 15 people obtaining CCTV can be considered to have benefited from the device. The exception was a 14-year-old boy whose failure was due to brain damage and possible mental retardation associated with his visual condition. Although the greater magnification provided by CCTV benefited the child visually, this boy's cerebral handicaps precluded improvement in his reading.

Five people (including one classroom teacher) in this group can be considered to use CCTV in conjunction with school activities to a great extent, and seven others can be considered to use CCTV in conjunction with school in a minor or adjunct fashion. No major problems were reported with monitor glare or flicker although some users reported having to adjust room lighting and contrast controls to reduce glare. One person preferred reversed polarity (white on black) as a means of reducing glare. One person reported extended problems with breakdown and repair. No one reported problems with manipulation of reading materials or with the CCTV controls, although keeping the pages of thick books in focus was considered troublesome at times.

Discussion

Recommending CCTV

It was found that the usefulness of CCTV as a reading aid for a particular individual could be assessed only through a trial with the device, not through prediction from eye condition or visual

Table 1. Case Summaries of Subjects Using CCTV

Case No.	Age	Distant Vision	Near Vision and Reading Distance	Diagnosis	Basic Magnification and Reading Distance with CCTV	Reading Speed (words/min.)		Comments
						CCTV	Ordinary Aid	
1	17	O.D. 1/200 O.S. NLP	Does not read with present aid	O.D. congenital glaucoma O.S. enucleation	20x at 4 1/2"	8	0	Braille, tape, and readers also used. Print reading possible only with CCTV. CCTV reading speed increasing to about 16 wpm after 1 yr. Uses CCTV for mail, personal material.
2	14	O.D. 1/200 O.S. 1/400	24 pt. at 3"	cortical blindness	18x at 3"	0	0	CCTV purchased by school system. Subject unable to read due to neurological impairment. CCTV of no use.
3	23	O.D. 2/200 O.S. 4/200	8 pt. at 4/5"	Leber's optic atrophy	18x at 12"	10	0	Subject lost print reading ability--can read print only with CCTV. Is regaining reading ability. Reading speed has increased with practice to 60 wpm. Uses CCTV for college work.
4	22	O.D. 3/200 O.S. 3/200	10 pt.at 1/5"	cong. cataracts, surgical aphakia	----	68	53	CCTV less fatiguing, Has master's degree in humanities. Used CCTV in graduate school.
5	16	O.D. 3/200 O.S. 3/200	18 pt. at 1"	cerebral blindness	22x at 8"	0	0	Braille reader. Is learning print letters on CCTV.
6	25	O.D. LP O.S. 20/1000	5 pt. at 1 1/2"	RLF	7x at 11"	116	217	Grad. student uses CCTV for statistics, tables, and machine read-outs. CCTV is less fatiguing.

Table 1. Case Summaries of Subjects Using CCTV (Continued)

Case No.	Age	Distant Vision	Near Vision and Reading Distance	Diagnosis	Basic Magnification and Reading Distance with CCTV	Reading Speed (words/min.)		Comments
						CCTV	Ordinary Aid	
7	11	O.D. 5/200 O.S. 5/200	18 pt. at 1 1/4"	Leber's congenital amaurosis	7x at 18"	36	0	Previously learned by tapes and readers with some reading of large print. Keeps CCTV in classroom, is gaining proficiency with it.
8	15	O.D. 6/200 O.S. 6/200	8 pt. at 2"	Leber's congenital amaurosis	18x	27	21	Parents purchased CCTV because of increased reading endurance.
9	17	O.D. 10/200 O.S. 10/200	8 pt. at 1 1/4"	Leber's congenital amaurosis	8x at 16"	68	47	Service organization purchased CCTV. Endurance increased. Reading speed increased with practice.
10	28	O.D. 5/200 O.S. 10/200	Cannot read with present aid.	Leber's congenital amaurosis	----	58	0	Subject cannot read regular print due to poor central vision. Is a professional, uses CCTV in office for business letters, etc.
11	15	O.D. 5/200 O.S. 5/100	10 pt. at 1"	Leber's congenital amaurosis	20x at 6"	5	11	Braille reader. Gaining working familiarity with letters.
12	90	O.D. 5/100 O.S. 5/2000	8 pt. at 3"	macular degeneration	10x at 12"	70	0	Wished to read financial tables.
13	18	O.D. NLP O.S. 5/80	10 pt. at 2"	RLF	7x at 24"	74	58	Endurance increased with CCTV
14	53	O.D. 20/400 O.S. 20/200	8 pt. at 5" with 2x spectacle magnification	macular degeneration	7x at 14"	68	0	Teacher keeps CCTV in classroom. Reads solely on CCTV in preference to spectacle aids.
15	12	O.D. 20/800 O.S. 20/240	5 pt. at 3"	Leber's congenital amaurosis	7x at 14"	75	51	CCTV increased reading ease.

acuity. This trial, at a minimum, should be long enough to allow the reader to become thoroughly familiar with the CCTV and should employ the same kind of reading material that the reader intends for his own use. It is only in this manner that the potential CCTV user, with reference to his particular visual functioning, reading habits, and reading needs, can assess the variable zoom magnification, the postural requirements, the manipulation of reading materials, possible difficulty with glare or flicker, and other important differences as well as subjectively comparing the CCTV to alternate low-vision reading aids available to him.

A trained person, thoroughly familiar with low-vision correction, low-vision functioning, and the range of low-vision aids available, including CCTV, should supervise this initial trial.

This is important for two reasons. First, CCTV should be regarded as one alternative among the many low-vision reading aids available, including, among other aids, taped and recorded material, live readers, braille, low-vision spectacle lenses, hand lenses, and non-optical aids. Which reading aid is best for a particular person is not only a function of the reader's visual condition and reading habits but will also depend on the kind of reading done and the demands of the reading situation. For instance, a student with poor vision may use tape-recorded textbooks as his primary reading aid, high-add spectacles for class use because they are easily portable, and CCTV for diagrams or articles assigned on short notice for which reading with spectacle lenses might be too fatiguing. Another student with a similar eye condition and acuity may employ a different set of low-vision reading aids, with CCTV, perhaps, being his primary aid, and taped materials being used rarely. The point is that any particular individual should be expected to employ a *mix* of reading aids depending on his reading abilities and needs; therefore, a specialist trained in low-vision correction is needed to familiarize the reader with the range of aids available and to recommend the precise reading aid or combination of reading aids that will suit the individual's needs. Naturally such a specialist must not only be familiar with low-vision correction, but he must be familiar with the demands of low-vision reading and functioning in schools, homes, offices, and other settings.

Secondly, this trained person is necessary to instruct the reader in specific CCTV usage. Most CCTV users, it was found, learned the necessary manipulation of reading materials fairly easily and were able to adjust the various controls and room lighting to suit their individual preference. Users also determined for themselves how long they could use the CCTV before fatiguing--in most cases, tolerance for use increased with practice until most readers could use CCTV from about one to five hours per day. However, many first time CCTV users tended to set the CCTV to its maximum magnification, even though more efficient reading was generally obtained by setting the CCTV to the minimum magnification necessary for the user to identify the words. Using minimum necessary magnification is helpful to the reading process in several ways.

Using minimum necessary magnification may enable the reader to include a whole word within his field of view, rather than just a few letters. This allows reading by recognizing word forms, a more efficient process than reading letter by letter. Individual letters may not be as distinct as with the use of greater than the minimum necessary magnification; however, the reading process, as Bateman's (1963) research indicated, may still function at a high level if the word form provides enough cues for word recognition. Setting the magnification to the minimum necessary also allows the reader to take advantage of his reading experience; he may be able to glance over many of the "little words" in reading and may use the context to give himself useful cues that will, combined with his perception of the word forms, enable him to understand the meaning. For instance, if an experienced reader is reading an article on Charlemagne and comes across a long word beginning with Ch, he will not have to see each letter or even the entire word in order to recognize the meaning. Using the minimum necessary magnification also makes it easier to keep the print in focus and to follow the lines and columns on the page. However, it must be cautioned that this principle of using the minimum necessary magnification is most important for experienced readers. Those learning to read print should use greater than minimum magnification to aid in the letter recognition process that is characteristic of beginning readers.

Types of Magnification

There is a further consideration in deciding on the desired magnification in that magnification on the CCTV is produced in two ways, termed basic magnification and approach magnification.

Basic magnification is defined as the measured increase in the size of the image on the CCTV monitor. The greater the basic magnification, the more the reader's field of vision is constricted on the CCTV monitor. For instance, increasing the basic magnification from 10x to 20x will reduce the field of vision in half.

Approach magnification is produced by the reader moving closer to the CCTV monitor; that is, by the reader reducing his reading distance. For instance, a reader who decreases his reading distance from 16 to eight inches will effectively double his obtained magnification. This is possible with reading distances as close as four inches. The advantage of approach magnification is that it is simple, that it is natural (witness the many partially-sighted children naturally shortening their reading distance), and that it is a flexible method of magnification. For instance, a CCTV user may read efficiently with less than maximum magnification, as described previously, but will employ approach magnification, by momentarily moving as close to four inches to the CCTV monitor, in order to identify words that are not immediately recognizable or are in particularly small type size. Of course, reading at a close focal distance such as this requires the ability to visually focus at that distance, so that readers who are myopic or have great accommodative amplitude, such as is found in very young readers, will have an advantage. For others, a specialist might prescribe reading additions for this distance to be used in conjunction with the CCTV. Following this procedure, it is possible to increase the basic 35x magnification by halving the reading distance and to 140x by again halving the reading distance; however, no reader evaluated required nearly this magnitude of magnification. Therefore, in summary, it is advisable to have the experienced reader decrease the magnification to the minimum necessary to recognize word forms and then instruct him to momentarily shorten his reading distance when he needs to recognize occasional details or difficult words.

Using CCTV: Representative Cases

Because adaptation to CCTV was highly individual, modes of using CCTV may be illustrated best by some brief case descriptions. All cases are summarized in Table 1, referred to previously.

Elementary school use. J.is an 11-year-old boy in the sixth grade of public school. His measured visual acuity in the best eye with correction is very poor, about 2/200, with a diagnosis of congenital primary retinal degeneration. Before acquiring CCTV, he was able to do some large-print reading with high-add spectacle lenses, but he relied on taped and recorded materials, with some help from readers, in order to progress in school. He has adamantly refused braille since being in school. About a year ago, CCTV was acquired on the recommendation of an ophthalmologist familiar with low-vision correction.

In class, J. keeps his CCTV on a low table near his desk, convenient for use at all times. His class is run in an open manner, with the children doing much of their work individually at different times or in different areas of the room with the teacher functioning as a resource person. In this way, J.'s CCTV is used individually by him in the same way that he and the other children individually use their workbooks at their own desk, the science materials at the science area, reading modules at the reading area, and so forth. J. uses his CCTV for math problems, textbooks, and especially for his reading skill builders and short diagrammatic worksheets. He prefers reversed polarity (white on black) although other people with similar eye functioning, in our experience, did not. He writes with the aid of spectacles, but will check his written work on the CCTV.

J. found, at first, that the edges of the paper tended to blank out, but he solved that himself by using a blank sheet of paper of the same color next to the page. He had no problems in manipulating his books or in following the columns and lines of reading material, although it was occasionally difficult to keep the reading material in focus. He reads at a distance of 18"; he finds this less fatiguing than 1-1/4", his reading distance with high-add spectacles. His CCTV is used for a period of about one hour a day, with taped materials and readers used for the greater part of his reading. He rarely uses his low-vision spectacles in class, in preference to CCTV, although he uses them in other settings because they are easily portable. J. considers the CCTV to be particularly helpful in making available to him many of the short workbook and module assignments that were difficult to transcribe on tape and that were too fatiguing to manage with his low-vision spectacles. He found that the presence of CCTV in the classroom was readily accepted by his classmates, and was quickly regarded as a teaching machine for his use in the same way the classroom's cassette recorders, mathematics aids, and science equipment are used by the rest of the class. He is still a slow reader, reading at about 36 words per minute, but he finds that he is improving with practice. J. varies the magnification on the CCTV depending on the difficulty and print style of the reading material. He reports that he can read any print on it with sufficient magnification, including material he cannot read with spectacle lenses. Adjusting and using the machine has become automatic; J. adjusts the zoom lens to his preferred magnification and employs approach magnification for small letters or difficult words.

High school use. B. is a 17-year-old senior in high school, an average student who hopes to attend a two-year college. Her visual acuity is 10/200 with a diagnosis of Leber's congenital amaurosis. A local service organization obtained a CCTV for her after her family had read about the device in the *Reader's Digest*. She has had her CCTV for about one and one-half years, keeping it at home where she uses it for reading textbooks. She also uses CCTV for math although the small sub- and super-scripts are difficult to make out. For this sort of math, she prefers using her spectacle lenses at a distance of one and one-half inches. B. finds that she can read on the CCTV for about half an hour before her eyes and back fatigue; she usually uses CCTV for about an hour a day in half-hour sessions. This is also her tolerance with spectacle lenses. B. found that dittoed material or material in blue is difficult to read and that large books are difficult to keep in focus. In summary, B. uses three reading aids in about equal proportions: spectacles at a rate of about 50 words/minute, CCTV at a rate which has slightly increased with practice to about 75 words/minute, and live readers. B. has reported extensive problems with equipment breakdown and repair. She does not use CCTV for writing.

D. is seventeen and is an above-average student in 11th grade. She keeps her CCTV in her bedroom where she uses it for reading the Bible and for reading personal matter, including her own mail. Her vision is extremely low (1/200 O.D., NLP O.S., congenital glaucoma). D. is a braille user who also relies on taped books and readers. She did not know her print letters before acquiring

CCTV; she has since learned them and can read at about 16 words per minute. She uses her CCTV only occasionally for school use but insists that the freedom it gives her to read her own mail is itself of such importance that she will take the CCTV to college with her. She is an extremely highly motivated reader for these specialized uses. When she first used CCTV, her reading rate was about eight words per minute, but it has since improved significantly.

College use. Two cases will be mentioned. R. has Leber's optic atrophy with best vision of 4/200 O.U. He was unable to read regular print with even a +40 (10x) spectacle lens, so he used braille and recorded material. However, using CCTV as his primary reading aid, he has finished the first year and a half of college and is continuing. Due to deteriorating vision, R. had lost most of his ability to recognize print words; when first evaluated on CCTV, he read at 10 words/minute. However, with practice, he now reads at 60 words/minute, using 15x basic magnification, plus approach magnification. R. uses the CCTV for periods ranging towards five hours daily. He does not use the CCTV for writing.

R. finds that textbooks are not generally used in his college courses. Rather, it is more common to find courses assigning many journal articles, published papers, chapters from books, and recent publications on short notice. Given this short-article format for course readings, R. found that recorded textbooks that must be prepared in advance were an unwieldy form of reading aid, while readers presented him with the familiar problems of using volunteer and student help. The CCTV's ability to instantly provide magnified reading material proved to be its greatest asset for him, rather than the speed or comfort of reading.

B. is a graduate student in social research with measured acuity of 4/200 in the best eye as a result of RLF. She uses both spectacle aids and CCTV. Using her spectacle reading lens (+32D), she is able to read at the remarkable rate of 217 words/minute at a distance of one and one-half inches. She also has remarkable endurance, being able to read for several hours at a time with only short breaks. She has found CCTV to be less fatiguing posturally, however, since she can move the reading material under the camera lens rather than moving her head across the page at a close distance as she is forced to do with her high-add spectacle lenses. Her reading rate with CCTV is slower (about 116 words/minute) than with spectacles, but the CCTV is useful to her in several specialized ways besides being less fatiguing. B. uses the CCTV as a typing aid, copying material viewed on CCTV on her typewriter. For another purpose, she tried focusing the CCTV camera on her typewriter, using a commercial attachment for this purpose, but found that only a few letters could be seen and that this arrangement made erasing difficult. B. also uses the CCTV for her statistical tables, scientific reports, and mathematical displays as well as using it as a magnifier for her Marchant electronic calculator. In summary, this student still relies on spectacle reading lenses for the greatest part of her reading but increasingly uses CCTV for specialized mathematical and statistical uses as well as for print reading.

Professional use. Three adults using CCTV will be briefly mentioned to illustrate the range of CCTV use.

C., a lawyer, has 10/200 best vision due to Leber's congenital amaurosis. His vision varies greatly, but he has not read print for years due to poor central vision. He keeps a CCTV device on a table in his office. His legal practice includes a great deal of interviewing, so that his reading requirements consist only of short memos, business letters, and other brief matter. His use of CCTV, typically, will consist of reading a short memo or personal note on the CCTV at one side of his office and then returning to his desk and phone, freeing his secretary from reading this sort of matter to him.

E. is an elementary school teacher with 10/200 vision as a result of macular degeneration. Print reading is difficult due to a central field loss. E. keeps a CCTV to one side of her classroom and uses it frequently over the course of the day for short periods of time. She can read at about 68 words/minute on the CCTV, but could not read regular print without it. After class, she uses it more extensively to grade papers and do administrative work.

T. is a 90-year-old gentleman with best vision of 10/200 (macular degeneration). He is retired and likes to read the financial tables. He could no longer make these out with a +32D reading addition, but is able to by using 10x magnification on a CCTV, reading at about 70 words/minute. This man was reading at this rate and adjusting the controls of the CCTV to his own satisfaction within five minutes of first exposure to the device.

Summary and Conclusions

Seventy-five low-vision people were evaluated for suitability to CCTV as a low-vision reading aid. Eventually 15 of these people acquired CCTV for their own use and contact was maintained with this group in order to follow their progress. Some of the findings may be summarized as follows:

Advantages of CCTV

1. Allows very high magnification

2. Increases the field of vision

3. Increases the reading distance--permits reading with better posture and less fatigue

4. May increase reading speed when vision is very poor, e.g., 4/200

5. Instantly magnifies ordinary reading material

6. Permits good contrast and uniform lighting

Disadvantages of CCTV

1. Expensive

2. Not easily portable

Main Findings

1. CCTV should be regarded as a reading aid for *very* low-vision as a last resort before braille is recommended. Several people, including some braille users, could read print with CCTV although they could not read print with any other low-vision reading aid. No one who could use other optical low-vision reading aids could not also use CCTV.

2. The primary benefit of CCTV may be in any of several areas, among them that CCTV makes ordinary print matter instantly accessible, that it may increase reading endurance, speed, or comfort, that it may enable a specialized use, such as engineering diagrams, or a combination of any of these or other factors.

3. CCTV should be regarded as one alternative among many available low-vision aids. It may be expected that most low-vision readers will employ a combination of reading aids, which may include CCTV. Corrective lenses may be used in conjunction with CCTV.

4. CCTV should be recommended by a specialist, and only after a trial during which individual characteristics and needs, as well as alternate reading aids, can be considered.

5. High total magnification may be produced by combining basic magnification with approach magnification.

6. CCTV fit in easily with school usage. Its individual use in elementary school fits in with the general classroom trend towards individualized instruction, self-instruction, and teaching by use of short diagrammatic worksheets. In college use, it was found that some students used CCTV for up to five hours per day and found it invaluable in keeping up with the trend towards using many short assignments of articles rather than the use of textbooks.

7. Only those motivated to read succeeded with CCTV.

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COMPRESSED SPEECH, LISTENING SKILLS, AND HANDICAPPED STUDENTS

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Background and Introduction

My presentation is titled "Compressed Speech, Listening Skills, and Handicapped Students" which implies, I hope, that I will address those three topics individually as well as collectively. As individual topics I intend only to identify, define, and delimit each of them; collectively, I hope to establish and document some observed inter-relationships among them.

First, I would like to set the stage, as it were, to describe the specific context within which my remarks, observations, and interpretations are to be made.

I am Director of the Compressed Speech and Aural Media Center Project, funded by a federal grant under Title VI-B to the California State Department of Education. This project, which succeeded and extended an earlier Title VI Project, like its predecessor, is operated through the Clearinghouse Depository for the Visually Handicapped (CDVH). The CDVH is a legislatively mandated operation which locates and/or provides instructional materials in Special Media appropriate for handicapped students in the State of California.

In 1963 the CDVH was founded specifically to aid visually handicapped students and their teachers in public schools from kindergarten through grade 12. In 1969 this mandate was extended to furnish assistance to community college, state college, and university students. Then, in 1972, it was broadened further to include students in private schools and colleges.

The big change, however, for CDVH was in 1971, when its services were extended, by legislative mandate, to include orthopedically handicapped, educationally handicapped, educable mentally retarded, and students in home-bound and hospital educational programs, as well as the visually handicapped. In one move, the target client population was increased over thirty times its original size.

By category, the CDVH clientele now numbers approximately 2,500 VH, 9,500 OH, 66,000 EH, 34,000 EMR, 11,000 others.

Fortunately for CDVH, most students in all these various categories of handicaps have at least one common problem which can be addressed, and to some extent ameliorated, by one common means. The problem is that they cannot read traditional inkprint books. The solution is to reproduce those books aurally and to make them easily available as tape recordings.

So in 1968 a project was funded through Title VI funds to develop a library of master tape recordings of needed educational material which could be duplicated as required by handicapped students. This project was called, reasonably enough, the Master Tape Library Project. This proved to be such a good idea that when its original span of three years was completed, the State took over the operation.

However, it was also quite apparent by that time that aural presentations of educational materials were so successful that the service needed to be expanded and that exploration of new ideas in aural media needed to be made. As they say in the theater, "Enter the Compressed Speech and Aural Media Center Project."

Funds were granted to expand the existing Master Tape Library service to handicapped students and to explore a new and promising idea called "compressed speech." The exploration and expansion are now completing their third year and will be incorporated as on-going programs of the CDVH, funded by the State.

I hope the stage is now set and the context for my presentation is established, for I would like now to address the topics of compressed speech, listening skills, and handicapped students.

Definitions

At the outset I said I would identify, define, and delimit these terms.

Perhaps it would be more meaningful to use the term "time-compressed speech" rather than "compressed speech," for it is the time that is compressed, not the speech. Time-compression of speech--shortening the time required for speech--may be accomplished in several ways.

The simplest way, and the way with which everyone is familiar to some extent, is merely to speed up a recording, so that the elapsed time to play it through is shorter than it would have been at normal speed. If you have experienced this means of compressing or shortening speech-time, you know that the more the recording is speeded up, the higher-pitched the voice of the speaker becomes, ending finally in a sort of Donald Duck effect which is well-nigh impossible to understand.

A second way to effect time-compression of speech is to delete or shorten pauses between words, phrases, and sentences. This technique does not alter the speaker's voice and is quite satisfactory--up to a point. That point, for me at least, is reached when all natural pauses are deleted, leaving the speaker, and the listener, virtually breathless. In this extreme case, the natural flow of spoken language is so badly distorted that the listener's comprehension suffers. A second serious disadvantage is that the rate of compression is limited by the reader's use of pauses.

A third and rather complex means of compressing speech-time is to reduce the amount of redundancy which is found normally in the pronunciation of various English phonemes. The redundancy to which I refer is traceable graphically as repetitious patterns of sound. Since a phoneme is, by definition, identifiable as a single sound element, repetition of the sound pattern is unnecessary, at least theoretically, for identification. Practically speaking, however, speech begins to sound a little strange when all such redundancies are removed. Nevertheless, this technique has much to recommend it. Unfortunately, it is complicated and costly and it provides only a limited amount of compression, even at its most extreme application.

The most generally satisfactory means of time-compression is called the "sampling method". A simple illustration will make this method clear. Imagine that you have a tape recording 100 feet long. Suppose that from each inch of that tape you snip a tiny segment--say an eighth of an inch. Now you throw away all the tiny segments you snipped out and then splice all the remaining 7/8 inch segments back together. You will have thrown away about one-eighth of the tape--12 1/2 feet. The tape remaining will now be 87 1/2 feet long. When played at normal speed, the speaker's voice will retain its original pitch, but it will take 12 1/2% less time to listen to it.

Now before you develop the picture of technicians sitting around snipping and splicing tape, let me assure you that an ingenious electro-mechanical device has made this unnecessary. Actually, there is more than one such ingenious device, but the one which we use at the Compressed Speech and Aural Media Center Project is called the Whirling Dervish. The Whirling Dervish is a spindle with four equally-spaced pick-up heads which whirls around, passing over a recorded tape. At the points in which the heads come in contact with the recorded tape, they pick up the recorded signal and transmit it to an ordinary tape recording unit. The gaps between the pick-up points, naturally, do not transmit a signal, thus representing the throw-away segments of our example.

The second topic I promised to define is "listening skills". Although "listening skills" is a term with self-evident meaning, i.e., ability to listen, there are a few things I should say about what is meant by the term in the present context.

First and foremost, we are talking about both hearing (the perception of the speech sound) and oral language ability (the understanding or interpretation of the speech sound). Thus "listening skills" here means the ability to perceive the sound signal of speech and the ability to interpret speech as language.

Second, we will be speaking about several specific areas of psycholinguistic ability as measured by a battery of aural tests.

Third, we will be considering "listening skills" as a group of interrelated cognitive skills which are identified and developed by a specific training program used in the Project.

Although I have, in a sense, already identified "handicapped students" as the client population of the CDVH, there is a subpopulation or sample of that large population of whom certain observations have been made. It is these observations which will document the inter-relationships I spoke of initially.

This sample or sub-population consisted of 145 students, of whom 59 (41%) were Educationally Handicapped, 74 (51%) were Visually Handicapped, and 8 (6%) were Educable Mentally Retarded. The remainder were not identified by handicapping condition. All the students were in public school programs in California, from 1st to 12th grade with ages ranging from 8 to 20.

Research

Even in the original conceptualization of the Compressed Speech and Aural Media Center Project, research was considered an important and integral part of the exploration of compressed speech techniques with handicapped students. However, because the Project also was conceived as a demonstration-type project, it was felt that the research operation should be compatible with *that* intention.

The implications of these considerations were that the research needed to document the practical utility of compressed speech for handicapped students and to suggest more effective ways to utilize aural media generally, should be conducted in a "natural" setting as opposed to a laboratory or controlled setting. This approach has sometimes been called "action research."

"Action research," unfortunately, has come into some considerable disfavor, as a term, with professional researchers. The feeling seems to be that it has been applied to projects whose faulty methodology and procedures were excused on the grounds that they were not conducted in "controlled settings" but in the classroom. However, so-called "action research" can be reasonably tidy and can give us a great deal of insight. It may also allow for greater serendipity--that marvelous, unexpected bonus of unanticipated findings.

The research study conducted by the Compressed Speech and Aural Media Center Project was designed and executed by Dr. Rose-Marie Swallow of California State University at Los Angeles, Dr. Marie Poulsen of UCLA Children's Hospital, Mr. Robert Gowan, the original Project Director, and numerous teachers of handicapped students in California. The data were gathered during the Spring of 1973. Much of the analysis and interpretation of the data herein reported are my own.

Three main research questions were posed:

1. Are there associations between the ability to comprehend oral language and certain selected psycholinguistic variables (e.g., sound blending, auditory discrimination, auditory closure)?

2. Is improvement in listening comprehension associated with specific psycholinguistic abilities?

3. Is the ability to comprehend compressed speech associated with these specific psycholinguistic abilities?

Research Design

The plan of the research was simple, but strong. The students were first given a battery of tests of listening comprehension and psycholinguistic abilities. After testing, they underwent a training program designed to improve their ability to comprehend by listening. At the end of the training program they were retested to assess the degree to which their comprehension-by-listening had improved. All activities with the students were within their normal school program.

Research Variables and Measures

The variables and measures used in the investigation were as follows:

1. Age - teacher report

2. Class level - teacher report

3. IQ (below average, average, above average, gifted) - teacher report of various tests

4. Handicap category - teacher report

5. Auditory closure (ability to fill in the missing parts of incomplete words presented orally, by producing the total word) - Illinois Test of Psycholinguistic Abilities (ITPA)

6. Auditory reception (the ability to derive meaning from oral material) - ITPA

7. Sound blending (ability to synthesize sound into words) - ITPA

8. Auditory Sequential Memory (ability to reproduce from memory varying sequences of digits) - ITPA

9. Auditory Association (ability to relate concepts presented orally) - ITPA

10. Auditory Discrimination (ability to discriminate similar and dissimilar pairs of words presented orally) - Wepman Test of Auditory Discrimination

11. Language Usage (ability to handle standard English syntax and grammatical structures) - California Achievement Test, Level 3-4

12. Listening Comprehension (functioning level of understanding aurally presented material) - Gilmore Oral Reading Test, Forms A & B

One other variable, called "Figure-ground Relationship" was measured, but the investigators discounted all results because of the clear unreliability of the test used.

To assess ability to comprehend compressed speech, the Gilmore Test was compressed at a rate of 30% compression.

It should be noted here that a major difficulty in analyzing and interpreting the data from the above tests arose from the fact that several of the tests, the Gilmore in particular, were not standardized as complete oral activities. What this means, primarily, is that we really do not know how reliably they may measure what they are said to measure.

Listening Skills Training Program

The training program used in the investigation was developed under a U.S. Office of Education grant in the Alameda County Schools by Leonard Lasnik. It consists of three levels, each of which devotes two lessons to each of eleven identified skills:

1. Inferring connotative word meanings

2. Identifying mood, humor, etc.

3. Providing examples by details

4. Re-stating sequences of ideas

5. Identifying main idea

6. Predicting sequences of thought

7. Inferring speaker's purpose

8. Applying standards to judge persuasion

9. Inferring main idea from specifics

10. Judging logical validity

11. Identifying sequence ambiguities

The lessons were read and recorded in the Master Tape Library studios in Sacramento and duplicates were sent to each of the 35 teachers who participated. After each student finished the training program, he or she was given the Gilmore Oral Reading Test, Form A, to measure the success of the program.

Results and Interpretation

Although I am prepared to document with an array of technical information the findings I report, it seems to me that for the sake of simplicity and communication we might forego such technical discussions. I asserted at the outset that all findings (unless otherwise noted) are statistically significant. Also for the sake of simplicity I will not lead you down all the various winding paths of related analyses which we followed to answer the research questions posed. If you will remember the limitations and constraints of our sample of students and the measures we employed to collect data, that should furnish you with sufficient grains of salt.

Question 1: Is listening comprehension related to psycholinguistic abilities?

Answer: Yes and no. When listening comprehension was defined as the score on the Gilmore Oral Reading Test, given before training or after, it correlated significantly with each of the psycholinguistic variables tested. However, when listening comprehension was defined as the difference between that score and the individual student's grade level expectancy, it was quite a different matter. No correlation of any substantial degree was found. The reason for this apparent paradox is really quite simple; age and class level were, themselves, correlated very highly with each of the psycholinguistic abilities measured. This may suggest that these abilities are, to some extent, developmental.

Question 2: Is gain in listening comprehension related to psycholinguistic variables?

Answer: Yes, but only with language usage, and that was a negative correlation! I am frankly unable to interpret this finding sensibly. I suspect that it may be simply the product of unreliable test scores--a problem about which I spoke earlier.

Question 3: Is the ability to comprehend compressed speech related to psycholinguistic variables?

Answer: Precisely the same as the answer to Question 1--yes or no. The high correlations observed disappear when class level is taken into account.

Summary of Research

Although the major findings of the research seem to be negative, much was learned in the process. One tangential finding, for example, was that student performance on tests of comprehending compressed speech is much more erratic than on tests of normal speech comprehension. This suggests to me that perhaps the student needs to be able to control the rate of compression himself, varying it according to his current ability to comprehend. Fortunately, such a thing is possible. At least three machines are currently being marketed which allow the user simply to turn a knob clockwise to increase effective rate of speech or counterclockwise to decrease it.

A second important finding was that students can learn to listen more effectively. The average gain for the entire group who participated in the Listening Skills Training Program was over 1 1/2 grade levels--not bad for 6 weeks!

Third, a fairly large amount of data was gathered which can be analyzed to respond to other questions.

Finally, in conducting the research, many teachers and students (besides those who participated) were introduced to compressed speech and listening skills training.

Other Project Activities and Accomplishments

Expansion

Besides the major research effort, the Project expanded the Master Tape Library holdings from around 1,000 titles to well over 3,000. Duplications have increased over 50%. Compressed speech orders now represent about 12% of all duplications.

Special Study Institutes

Two Special Study Institutes on "Learning Through Listening" were held in 1972 and 1973 at San Francisco State University and California State University at Los Angeles, respectively. These institutes brought together teachers of handicapped students and leading authorities on aural media, compressed speech, and listening comprehension.

"Spin-offs"

At least two demonstration-research projects have been developed as a direct result of the project. One, in Anaheim, will take place next fall; the other, conducted by Mr. Ray Van Alstyne as a master's degree project in his classroom at Evergreen Elementary School was completed this past spring. Partly because I think you will be interested in the results and partly because Van Alstyne's design may furnish you with a simple, sturdy, and clean model you may wish to use with your own students, I have developed a quick review and summary of the study.

The purpose of the Van Alstyne Study was two-fold: to determine if EMR children can utilize compressed speech effectively and to explore effects of different lengths of presentation.

Twelve students, with IQ's ranging from 52 to 77, and ages ranging from 10 to 14, were divided into two equal groups of 6 each with a mean IQ for each group of 68+. Mean reading levels for the two groups were also similar, as was mean age. Each group had one girl and five boys.

The text material used for this study was an adventure story of an appropriate reading level--3rd grade. The book is divided into 8 nearly equal length chapters. The text was read and recorded by a professional reader and compressed at 20%.

Group One was presented a single chapter at one hearing--about 10 minutes duration--immediately after which a test covering that chapter was given. Group Two was presented with two chapters at one hearing--about 20 minutes duration. The test covering the two chapters was given immediately.

The tests for all chapters were multiple choice, with three possible answers. Every attempt was made to minimize errors caused by a lack of understanding of procedure or by giving the children too difficult a task to which to respond. The questions were asked verbally. The children then made marks in the first, second, or third empty box by each number on their answer sheets, indicating their choices of answers. The possible answers were repeated, to be certain the children could respond.

The purpose of the study was well served. Dramatic evidence that EMR students can utilize compressed speech effectively was obtained by comparing a so-called "normal" class's mean score with that of the EMR Group One on the test of Chapter One given immediately following the presentation. The mean score for the "normal" group was 63% correct, and for the EMR Group One, 62%.

The length of presentation was shown to affect test scores. Group One, whose presentation and test covered one chapter per hearing scored significantly higher ($p < .05$) than Group Two on the means of all chapter tests. In fact, except for two chapter tests in which the group means were identical, Group One scored higher than Group Two on each chapter test.

After one month, retention of information was also tested. Although the difference between the means of the two groups was not significant on the retest, both groups scored surprisingly high. The mean for Group One was 66%, for Group Two, 61%, and for the total combined groups, 64%. The investigation attributes the high retest scores, in part, to having reviewed frequently-missed questions and answers of the first tests after each test.

Further analysis of the data is planned, as is further investigation.

Future of the Project

In conclusion, I would like to reiterate that the activities of the Project will be incorporated as on-going programs within the CDVH (as indicated in the handout literature). Revision of the Listening Skills Training Program is now underway. Initial field testing has been arranged for next Fall, and, hopefully, the revised version will be ready for production next Spring.

Workshops and in-service training sessions with teachers will be held more or less continuously to stimulate interest and professional expertise in teaching children to listen more effectively.

Finally, innovations in recording, such as new indexing systems, formats, etc., will be introduced and evaluated.

CAREER EDUCATION AND THE HANDICAPPED PERSON

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Introduction

Career Education represents a response to a call for educational reform. This call has arisen from a variety of sources, each of which has voiced dissatisfaction with American education as it currently exists. Such sources include students, parents, the business-labor-industry-professional community, and the general public. Special segments of the population, including the economically disadvantaged, minorities, the handicapped, and gifted persons have also expressed deep dissatisfaction with both the appropriateness and the adequacy of educational opportunities that are made available to them. While their specific concerns vary, all seem to agree that American education is in need of major reform at all levels. Career Education is properly viewed as *one* of several possible responses that could be given to this call.

Career Education seeks to respond to this call for change through making education as preparation for work both a prominent and a permanent goal of our entire educational system. To accomplish this goal, career education seeks first to unite all segments of the formal educational system in this common effort. To this, we seek to add the collaborative efforts of both the business-labor-industry-professional community and the home and family structure in ways that enhance attainment of this goal for all persons through a broad range of community services and activities.

NOTE: These remarks represent personal thoughts of the author and, in no way, are intended to imply or represent an official position of the U.S. Office of Education.

From the beginning, career education advocates have proclaimed that they seek to serve *all* persons of all ages in all kinds of educational settings. In practice, we have seen career education programs primarily limited to elementary and secondary school youth enrolled in regular public school programs. This situation cannot continue if the promises of career education are to be attained. In this article, the problem will be illustrated through considering implications of career education for handicapped persons.

Basic Definitions Essential for Understanding Career Education

Six basic words must be redefined in order to understand the concept of career education itself. These six words are: (1) "work;" (2) "career;" (3) "vocation;" (4) "occupation;" (5) "leisure;" and (6) "education."

"Work" is conscious effort aimed at producing benefits for oneself and/or for oneself and others. As such, it is unimportant whether such effort is paid or unpaid in nature. What is important is that it represent the basic need of all human beings to achieve - to accomplish - to *do* something productive that allows the individual to discover both who he/she is and why he/she is. With this definition, work is properly viewed as a human right - not as a societal obligation.

"Career" is the totality of work one does in his or her lifetime. Thus, any person can have only one career. That career typically begins prior to entering formal schooling and continues well into the retirement years.

"Vocation" is one's primary work role at any given point in time. Vocations include paid employment, but they also extend to unpaid work roles. For example, we can speak of the "vocation" of the student, the full-time volunteer worker, or the full-time homemaker just as easily as we can speak about the "vocation" of the plumber, the physician, or the engineer.

"Occupation" is one's primary work role in the world of paid employment. Economic returns are always considered among the work values of persons engaged in occupations although these might not be considered at all by persons in certain vocations. The occupations of many persons will be synonomous with their vocations. One can never have an occupation without having a vocation although, of course, one can have a "vocation" without being engaged in an "occupation."

"Leisure" consists of activities, other than sleeping, in which one engages when not performing in his or her vocation. Thus, "leisure" holds possibilities for both "work" and for "play."

"Education" consists of all those activities and experiences through which one learns. As such, it is obviously a lifelong process and considerably broader in meaning than the term "schooling."

All that follows is based on an assumption that these six basic words are understood and their meanings agreed upon. Those who disagree with one or more of these definitions will necessarily find themselves disagreeing with much of the remainder of this presentation.

With the way in which these six terms are defined, "career education's" definition, in a generic sense, becomes simple and straightforward. *Career education consists of all those activities and experiences through which one learns about work.* As such, it makes no restrictions in meaning whether one speaks about work of the homemaker, the musician, the lawyer, or the bricklayer. Some work will require advanced college degrees while other work may include no formal schooling of any kind. Some work will be in the form of primary work roles, paid or unpaid, while other work will be carried out as part of one's leisure time. To the extent that work is judged "successful," it does typically - and, in these times, increasingly - require some learned set of vocational skills.

Further Consideration of the Meaning of Work

The preceding definition of "career education" brings us back to further consideration of the meaning and implications of the four letter word "work." Work, as used here, is a concept available only to human beings in that it is restricted to conscious effort - to something that the individual thinks about and chooses to do. It is this quality of conscious choice that most clearly distinguishes the word "work" from the word "labor." That is, "labor," like "work," may very well result in production of benefits, but it does not carry with it the connotation of something that the individual consciously chooses to do. Instead, "labor" is more accurately regarded as forced, involuntary effort that lacks personal meaningfulness and significance for those who perform it.

Why do people work? Answers given to this question can be grouped into three broad classifications of reasons - economic, sociological, and psychological. Work, in the world of paid employment, always includes economic reasons and, if maximally meaningful to the individual, carries sociological and psychological reasons as well. Economic reasons, of course, center around the needs most of us have to accumulate income so that we can purchase goods, products, or services produced through the work of others. Sociological reasons center around recognition that one's work contributes to the goals of our society in a positive way - that what one does has benefit for one's fellow human beings. Psychological reasons center around personal recognition of one's accomplishments - around the feeling of being *someone* through being able to say that one has accomplished *something*.

While most persons experience economic reasons for working and many, although not all, can readily observe the sociological significance of the work that they do, the single reason for working that can be said to apply to all persons is that which centers around the psychological dimension. Former President Lyndon Johnson perhaps expressed this need for work as clearly as anyone when, in a speech, he said: "To hunger for use and to go unused is the greatest hunger of all." He was, of course, referring to the human need of all human beings to feel that someone needs them for something - that it does matter to someone that they exist - that, because they are alive, the world is, in some way and to some degree, better off.

The concerns and scope of career education extend to all three of these basic reasons for working. It is this breadth of concern that enables career education to say that it is concerned with all persons of all ages in all settings from all levels of educational background. The basic premise of career education is that the need to work is a basic human need for all human beings. That is why we refer to work as a "human right" rather than as a "societal obligation."

Career Education and Handicapped Persons

In a recent paper, C. Samuel Barone, USOE Bureau of Education for the Handicapped, presented the following predictions regarding the approximately 2.5 million handicapped youth who will leave our school systems in the next four years:

525,000 - 21% - will be either fully employed or enrolled in college.
1,000,000 - 40% - will be *underemployed* and at the poverty level.

200,000 - 8% - will be in their home community and idle much of the time.
650,000 - 26% - will be unemployed and on welfare.
75,000 - 3% - will be totally dependent and institutionalized (Barone, 1973).

Predictions, such as these, raise very grave concerns for those dedicated to the career education movement. The prediction that one million of these handicapped youth will be *underemployed,* is a very serious matter indeed. The concept of underemployment is one that pictures a person as possessing greater degrees of productive capability than the tasks he or she is asked to perform routinely require. Underemployment leads to boredom on the job and is seen by many as a major contributor to worker alienation in our society at the present time. To predict that this will be the fate of 2 out of every 5 handicapped youths leaving our school system in the next four years can only be regarded as a serious indictment of our educational system and of the larger society.

We have, for far too long, seemed to act as though a handicapped person should be both pleased with and grateful for any kind of work society provides. Unlike other persons, we seem to assume that, if a person is handicapped, boredom on a job is impossible. Worse, much of society has seemed to assume that, while most persons should seek work compatible with their interests and aptitudes, such considerations are not necessary when seeking to find employment for handicapped persons. If *any* job in the world of paid employment can be found for the handicapped person, we seem far too often to be personally relieved, and surprised when the handicapped person is anything less than effusively grateful.

Similarly, we seem to assume that those handicapped persons who are not employed in the world of paid employment are not and cannot be working. This is, in the philosophy of career education, both false and wrong. We know that, for example, the fact that a person is unemployed and on welfare certainly does not mean, for many such persons, that they do not work. There is a very great deal of work being carried out in many welfare homes, the results of which are readily apparent to any who visit in such homes. Yet, because persons on welfare are not engaged in the world of paid employment, society seems to assume that they are not working. Even more tragic, some seem to assume that people on welfare do not want to work. If the human need to work pictured here has any validity at all, it certainly applies to persons on welfare just as to all other persons.

The 200,000 youth who are predicted to be in their home community and idle much of the time can certainly not be written off as persons with no interest in working or no personal needs to work. Something should be provided for such persons, whether it be paid or unpaid work. The field of the handicapped has, for years, been promoting the concept of the sheltered workshop for those who are unable to compete effectively in the world of paid employment. The prime rationale for the sheltered workshop must surely lie in recognition of the human need for work that is being discussed here. If this concept is valid for those in sheltered workshops, it is certainly also valid for those who are not.

Career education seeks to make work possible, meaningful, and satisfying for *all* individuals. To do so for handicapped persons demands, first of all, that we regard their right to choose from among the widest possible set of opportunities equally as important as for any other individual. We seem too often to be satisfied when we have found *something* that a handicapped person can do. We should be dissatisfied until and unless we have explored, to the fullest possible extent, the total array of work that might be possible for a given handicapped person. To stop prior to reaching this point is being less than fair to the handicapped person and to the larger society.

One further basic principle of the career education movement would seem to have some relevance for handicapped persons. This is the principle that holds that we should seek to emphasize the individual's successes, not his or her failures. In career education, a conscientious attempt is made to emphasize accomplishments - attainments - achievements - *doing*. This can best be carried out by refusing to emphasize failures and shortcomings. It would seem that this principle holds some positive potential for working with handicapped persons who, far too often, are made well aware of their limitations and, in the process, effectively limited in discovering their talents. We have, it would seem, been sometimes too much concerned about helping the handicapped realize and appreciate how much society is doing *for* them. In so doing, we run the risk of de-emphasizing, for many handicapped persons, how much each can do for himself or herself.

Concluding Remarks

Handicapped persons are as deserving of whatever benefits career education has to offer as are any other individuals. To date, not many career education programs have made the kinds of special efforts necessary in order to make career education a reality for handicapped persons. It is hoped that these remarks may stimulate both those in career education and those working in the field of the handicapped to work together in order to correct this lack of attention. The need to work *is* a human need of all human beings. Handicapped persons *are* human beings.

Reference

Barone, C. S., Paper presented to a Forum of National Organizations sponsored by the Vocational Evaluation and Work Adjustment Association, the National Rehabilitation Association, and the Presidents Committee for the Employment of the Handicapped. October 25, 1973.

CAREER EDUCATION AND THE VISUALLY HANDICAPPED

John P. Best

Region XIX Education Service Center
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In order to understand the career education related needs of the visually handicapped, it is first important to review career education in general. Against this frame of reference some unique needs of the visually handicapped gain greater perspective.

An overview of career education reveals that the concept encompasses the entire school program. It is a process of unification of the curriculum with the career goals under constant consideration. During the 1970's schools will work with approximately 26 million students. Out of every 10 youngsters in grade schools now, three will not finish high school and eight out of ten will not finish four years of college. The job of education then, is to help students prepare for the changing world of work. Under the broad umbrella of career education are found the areas of occupational education and technology, academic education, community involvement, and guidance and counseling. As the K through 6 students become involved in health, spelling, science, English, reading, social studies, art, mathematics, and physical education, the concepts of career education are interwoven with the curriculum. An awareness of the world of work leads to career investigation and orientation through activities covering such topics as values of work, dignity of work, why people work, job opportunities, attitudes, values, and motivation. As the awareness stage progresses, the developing self-understanding and information build up empirically to lead to decision-making skills. As the students progress through the seventh and eighth grades, the information base is broadened to include more detailed occupational information, including skills, education, and physical requirements of various jobs and job clusters. Included is information regarding job entry requirements, developing job interests, self-appraisal, job opportunities, and training opportunities. More information is brought into play regarding present and future salary opportunities in various occupational fields along with more and more information designed to help the individual in personal decision-making regarding educational plans and occupational choices. Career exploration and investigation during the ninth and tenth grades should be achieved through hands-on experiences in laboratories, shops, and through experiences in various community resources. A combination of the opportunities for exploration and experiences provided through the school, home, and community helps the student to examine further his or her own interests, aptitudes, and abilities. During the eleventh and twelfth grades the areas of awareness, orientation, investigation, and exploration tend to become more focused through comprehensive course offerings plus the options of developing specific vocational skills, apprenticeship experiences, and on-the-job training. By the time of completion of high school the individual should be equipped to make decisions regarding career and/or college training. The skills for laying out and subsequently modifying the blueprint for life are developed through the career education model, thereby giving meaning and purpose to the educational experience. Additionally, the trend is more and more moving in the direction of emphasis on the responsibility of the school for placement of the individual.

Casual reference to this capsule of career education might lead to the conclusion that these are the normal activities of most schools. To some extent this is true. The point of major importance is the constant focus on the objectives of the total educational experience. Subject matter in isolation and without a clear link to its use and purpose has been the cause of confusion to many students. Educators who have lost sight of the reason for education have contributed to the dilemma. Career education then is a systematic and integrated approach to preparing the individual to cope with his or her career in a changing world.

All of what has been covered so far certainly has relevance for the education of the blind and visually handicapped. However, it is essential to add some other considerations. Included in these are the importance of special compensatory study skills, activities of daily living, orientation and mobility, a high visual index, social skills, and availability of career and occupational information. Rather than attempt to attack all of these areas here, the focus will be on two areas: social development and career information.

In a recent study by this auther, various areas of school programs for the visually handicapped were examined in the light of the desires of ex-students. When the area of student life was investigated the ex-students made their opinions very clear. The individuals who demonstrated the highest degrees of personal independence in such categories as orientation and mobility, personal self-care skills, and ability to integrate into the sighted community were the ones who recommended the most liberal social living environment for the blind and visually handicapped in school. This was true of both the college students and the individuals whe pursued some other career direction. The administrators of the programs studied strongly concurred with this. If the blind or visually handicapped individual is to compete with his or her sighted peers, it is essential that normal social development experiences be not only allowed, but emphasized. This means boy-girl relationships, independence of movement, decision-making opportunity, a wide range of social interactions, uncensored information sources, and the opportunity to make mistakes and profit thereby. It further means that opportunities must be provided to learn the social mores by interaction and involvement and the opportunity for honest feedback to establish a frame of reference. In this author's opinion, the most damaging possibility is the stifling effect of over-protection. If normal social development is to occur, there must be a climate of openness, honesty, and opportunity for the same real life experiences encountered by the sighted person. Through normal social development, the blind and visually handicapped will have a much greater opportunity to take advantage of the career education opportunities outlined earlier.

There has always been a dearth of career and occupational information materials in the media which can be independently utilized by the visually handicapped. Region XIX Education Service Center in El Paso, Texas, is planning an activity for the 1974-75 school year which is designed to make more information of this type available. Through a project to be funded by the Texas Education Agency plans are underway to identify and categorize the career information needs of grade 9 blind and visually handicapped students by surveying a sample of residential and public school students and staff. The information gained will be analyzed by an advisory panel of experts. This analysis will be interfaced with *V*ital *I*nformation for *E*ducation and *W*ork already developed by Region XIX Education Service Center. Career information materials will be selected, modified, and field tested. The field tests will be conducted in various programs for the visually handicapped in order to gain more information preliminary to preparing prototype packages in braille, recorded forms, etc. for broad distribution. At the conclusion of the first year a summary report and recommendations for further action will be prepared. It is anticipated that this project will become the vehicle for preparing a large number of materials packages in various areas of occupational and career education, thereby making the career education model described more attainable for the visually handicapped.

It is clear that the implementation of the career education model will greatly strengthen programs for the blind and visually handicapped. In order to actualize such programs it will be necessary to integrate all of the special training aspects of education of the blind and visually handicapped into the program in the same way that career education is integrated with the regular curriculum. Social skills and career information development simply provide some of the special ingredients needed. These, combined with orientation and mobility and activities of daily living, will support the development of complete programs, properly recognizing the unique needs of the blind and visually handicapped.

THE SUPPLEMENTAL SECURITY INCOME PROGRAM--ITS PHILOSOPHY AND POSSIBLE IMPACT UPON THE REHABILITATION OF THE BLIND

Fred Crawford

Social Security Administration
Baltimore, Maryland

The Supplemental Security Income Program for the Aged, Blind, and Disabled (SSI) replaced former Federal-State programs of assistance to needy aged, blind, and disabled persons in the 50 states and the District of Columbia effective January 1, 1974. SSI is administered by the Social Security Administration and benefits are payable based upon nationally uniform eligibility standards. Although this new program has brought about many changes, such as the establishment of a basic Federal income floor for those persons who require income maintenance assistance, the SSI program maintains close working relationships and cooperation with the states. States may elect to supplement basic Federal payments and may either choose to administer their own program of state supplementation or they may contract with the Social Security Administration to administer their supplementation programs at no expense to the states.

Because studies have shown that approximately half of all SSI beneficiaries also receive payments under the Old Age, Survivors, and Disability Insurance program, commonly known as Social Security, it may be helpful to contrast this program with SSI. Eligibility for Social Security cash benefits is based upon the insured status of a worker through whom coverage is extended to his or her dependents. Therefore, Social Security is work-related, has no means test, is compulsory for most workers, and is contributory on the part of employees and employers. SSI has a means test, is paid for from general revenues, is not work-related but offers incentives for those who work, and the program provides opportunities for rehabilitation. The philosophy of the SSI program is that people who are able to earn a living should; people unable to earn a living should have help. Many aged, blind, and disabled persons fall into this later group.

A blind person of any age whose income and resources are sufficiently limited may be eligible to receive SSI monthly benefits. The statutory definition of blindness found in the Social Security Law is defined as 20/200 or less central visual acuity in the better eye with the use of a correcting lens, or a reduction in the field of vision to an angular distance no greater than 20 degrees. For those persons who received Aid to the Blind payments in December, 1973, the definition of blindness which was in effect in state public assistance plans as of October, 1972, is being used as the definition for continuing eligibility of these former recipients.

The purpose of the SSI program is to supplement the income of the aged, blind, and disabled whose income is below certain levels. Therefore, an individual does not have to be totally without income in order to be eligible for Supplemental Security Income payments. There are a number of income exclusions, notably for blind persons who work. After allowable exclusions of earned or unearned income are taken into account, the remaining countable income will reduce SSI payments so that checks are issued in varying amounts. Effective July 1, 1974, the maximum SSI monthly benefit for an individual will be $146, and for a couple $219. Additionally, states may have supplements that are added. For example, a blind person in California could receive a combined federal and state amount of $265, and a blind couple could receive up to $500 a month.

Certain other eligibility requirements must also be met. An SSI beneficiary must be either a citizen of the United States or a lawfully admitted alien for permanent residence. Beneficiaries must also be residing in one of the 50 states or the District of Columbia. Individuals must file for all other benefits to which they may be entitled such as Social Security, Workmen's Compensation, and Veterans' benefits. A blind or disabled person under the age of 65 is referred to the appropriate state vocational rehabilitation agency and must accept the services offered to him. Patients in public institutions such as prisons or state hospitals are not eligible for those months in which they are institutionalized.

Because the Association for Education of the Visually Handicapped is concerned with the needs of both the blind and the visually handicapped, perhaps you want to know how blindness is determined and whether visually handicapped individuals may qualify for SSI. The presence of a qualifying disability or statutory blindness is based upon a disability determination made by a State Disability Determination Unit. These determinations are made based upon the examinations of medical specialists in local communities. The determination of blindness may be made from evidence furnished by the examination report of either an Optometrist or Ophthalmologist. Some applicants for SSI who have severe visual impairments but who are not statutorily blind may qualify as disabled. The income disregards and other policies relating to disabled beneficiaries would then apply.

Let us now turn our attention to children. This is the group of blind and disabled potential eligibles in which you have the greatest interest. For the first time both blind and disabled children can receive income maintenance payments under the SSI program if they reside anywhere in the country. Heretofore, some of the states made Aid to the Blind payments to blind children but disabled children were not eligible. A blind or disabled student living at home will have the income of the family taken into account in determining whether or not SSI benefits are paid. If the family already receives Aid to Families with Dependent Children (AFDC) under title IV-A of the Social Security Act (a program administered by the states), a blind or disabled child may choose between the AFDC and SSI programs. In some instances it may be more advantageous to the family and the child to receive benefits from one or the other of these programs. A student residing at a state or private nonprofit school for the blind may be eligible for benefits while not in school. While enrolled in the residential school, however, the value of room and board will serve as countable unearned income with an allowable exclusion of $20 a month. While there may be exceptions, most schools indicate that room and board constitutes value in excess of current SSI income limits.

Program ties and linkages have already been established so that an applicant for SSI benefits may also become eligible or at least be referred for other programs to meet specific needs. It has already been noted that blind and disabled persons under the age of 65 who are old enough to participate in vocational rehabilitation services are referred for this service. The Social Security Administration makes 100 percent federal funds available to state vocational rehabilitation agencies. This additional money will assist these state agencies in their efforts to rehabilitate larger numbers of SSI beneficiaries. Also, 25 of the states have adopted criteria so that eligibility for SSI payments carries with it eligibility for Medicaid. Medicaid programs can prove to be a good source of funding for minimizing many of the medical problems which affect the health and level of functioning of many blind and disabled children. Social Security district offices also often make referrals to social service and other specialized agencies and schools in local communities.

There is already evidence to show that the SSI program, although still in its early stages of operation, will have a dramatic effect upon children. The children referred to, of course, are those blind and disabled infants and youths whose individual and family income and resources are inadequate to meet their needs. Over 55,000 applications for benefits to children have already been received. There were fewer than 3,000 children under the age of 18 receiving SSI benefits during the month of January, so it is easy to see how children in large numbers are beginning to file for enrollment in the program. The Social Security district office, where all applications are to be filed, is commonly viewed in a different perspective than was the case when applications were made in county welfare offices. Because the law under which SSI operates does not impose liens or include provisions of relative responsibility, there is no need to fear the adverse future consequences of filing an application for enrollment in the program.

The Vocational Rehabilitation Act of 1973, PL 93-112, focuses the attention of state vocational rehabilitation agencies on the provision of rehabilitation services to the severely handicapped. The severely handicapped certainly include blind children who must learn to compete in a sighted world where many traditional occupations practiced by blind persons have become either obsolete or unprofitable. With the existing close ties between the Social Security Administration and the vocational rehabilitation community nationwide, we have reached a milestone in 1974 which should mark the beginning of greater opportunities for independence and productive lives for economically deprived blind children now and in future years.

Although the SSI program is still in its infancy, its philosophy and concepts have already become clearly defined. To be fully successful as a new concept in the area of income maintenance, the SSI program requires the close coordination and cooperation of federal, state, and local efforts aimed at meeting the needs of our aged, blind, and disabled citizens.

The Federal government is now paying a larger share of income maintenance costs thereby relieving the states and other welfare jurisdictions of some of their financial burdens. There is an opportunity now for the strengthening of state and federal relationships so that activities on behalf of the poor will interface with each other. With lighter caseloads in state welfare agencies, these agencies may now be able to reorder their priorities and add new services.

As professional workers and educators, you have a key role to play both in the SSI program and in your local community. You will no doubt know visually handicapped children and possibly aged, blind, or disabled family members of your students who are in need of the kind of financial assistance the SSI program can provide. You will also recognize that while financial help is important, there are many other kinds of aid that are not now available in your state. Because you will be among the first to recognize gaps in services and unmet needs, you can work for the establishment of total service programs in order that together we may better meet the needs of the whole visually handicapped child or adult.

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ASSOCIATION FOR EDUCATION OF THE VISUALLY HANDICAPPED

Since 1853, only about twenty years after the first schools for blind children had been established in the United States, the Association for Education of the Visually Handicapped has been the professional association of educators of children whose educational programs required some adjustment because of their visual limitations. Over those years, the association has naturally mirrored the nature of education offered to blind children. It was first known as Instructors of the Blind, then and for many years, as American Association of Instructors of the Blind; for most of those years its membership was made up chiefly of staff of residential schools because it was in such schools that blind children were usually educated.

However, in recent years special educational opportunities have been offered not only to the "blind" but to many children with varying degrees of useful vision, and that education has increasingly been in the public day school setting. With these changes the term "visually handicapped" seemed more accurate and more generally acceptable than the term, "blind." To accommodate to this, the name of the Association was changed in 1968 to Association for Education of the Visually Handicapped.

As specialization developed in the field, the Association adjusted by building its program around workshops which could reflect the many special interest areas, which could provide for small group discussion and solution of problems, and within which framework people with common interests could work together throughout the biennium as well as at biennial conferences. Student chapters, state and local chapters, and the regional organization adopted in 1974, all represent ways in which AEVH seeks to bring the Association closer to each member and to unite educators with common, and sometimes geographically specific, concerns.

AEVH also serves through publication of a professional journal, EDUCATION OF THE VISUALLY HANDICAPPED, a bulletin called FOUNTAINHEAD, and a volume of selected papers from each biennial conference. The organization participates actively in teacher and houseparent/child care worker certification, in development of standards for the field, in training institutes, and in the encouragement and report of research. AEVH is affiliated with the Council for Exceptional Children, a department of the National Education Association; through cooperation with other national and international bodies the Association represents concern for visually handicapped children on many fronts. Each year, the popular AEVH brochure on education of the visually handicapped as a career is sent to many guidance counselors and young people who seek information relevant to their own choice of a profession.

For further information, write AEVH Executive Secretary, 919 Walnut Street, 4th Floor, Philadelphia, Pennsylvania 19107.

MEETINGS

The following is a list of the conventions of the American Instructors of the Blind (1853-1871), the American Association of Instructors of the Blind (1872-1968), and the Association for Education of the Visually Handicapped (1968-1976):

1st Meeting: August 16-18, 1853, at New York, New York
2nd Meeting: August 8-10, 1871, at Indianapolis, Indiana
3rd Meeting: August 20-22, 1872, at Boston, Massachusetts
*4th Meeting: August 18-20, 1874, at Batavia, New York
5th Meeting: August 15-17, 1876, at Philadelphia, Pennsylvania
6th Meeting: August 21-23, 1878, at Columbus, Ohio
7th Meeting: August 17-19, 1880, at Louisville, Kentucky
8th Meeting: August 15-17, 1882, at Janesville, Wisconsin
9th Meeting: August 19-21, 1884, at St. Louis, Missouri
10th Meeting: July 6-8, 1886, at New York, New York
11th Meeting: July 10-12, 1888, at Baltimore, Maryland
12th Meeting: July 15-17, 1890, at Jacksonville, Illinois
13th Meeting: July 5-7, 1892, at Brantford, Ontario, Canada
14th Meeting: July 17-19, 1894, at Chautauqua, New York
15th Meeting: July 14-16, 1896, at Pittsburgh, Pennsylvania
*16th Meeting: July 12-14, 1898, at Lansing, Michigan
17th Meeting: July 9-11, 1902, at Raleigh, North Carolina
*18th Meeting: July 20-22, 1904, at St. Louis, Missouri
*19th Meeting: August 21-23, 1906, at Portland, Oregon, at Salem, Oregon, and at Vancouver, Washington
*20th Meeting: July 14-16, 1908, at Indianapolis, Indiana
*21st Meeting: June 28-July 1, 1910, at Little Rock, Arkansas
*22nd Meeting: June 25-28, 1912, at Pittsburgh, Pennsylvania
*23rd Meeting: June 28-30, 1915, at Berkeley, California

*24th Meeting: June 4-7, 1916, at Halifax, Nova Scotia, Canada
25th Meeting: June 24-28, 1918, at Colorado Springs, Colorado
26th Meeting: June 21-25, 1920, at Overlea, Maryland
27th Meeting: June 27-30, 1922, at Austin, Texas
*28th Meeting: June 23-27, 1924, at Watertown, Massachusetts
*29th Meeting: June 21-25, 1926, at Nashville, Tennessee
*30th Meeting: June 25-29, 1928, at Faribault, Minnesota
*31st Meeting: June 23-27, 1930, at Vancouver, Washington
*32nd Meeting: June 27-July 1, 1932, at New York, New York
*33rd Meeting: June 25-28, 1934, at St. Louis, Missouri
34th Meeting: June 22-25, 1936, at Raleigh, North Carolina
*35th Meeting: June 27-30, 1938, at Lansing, Michigan
*36th Meeting: June 24-28, 1940, at Pittsburgh, Pennsylvania
*37th Meeting: June 26-30, 1944, at Little Rock, Arkansas
38th Meeting: June 24-28, 1946, at Watertown, Massachusetts
*39th Meeting: June 21-25, 1948, at Austin, Texas
*40th Meeting: June 26-30, 1950, at Philadelphia, Pennsylvania
*41st Meeting: June 29-July 3, 1952, at Louisville, Kentucky
42nd Meeting: June 27-July 1, 1954, at Batavia, New York
43rd Meeting: June 24-28, 1957, at Worthington, Columbus, Ohio
44th Meeting: June 22-26, 1958, at Vancouver, Washington
*45th Meeting: June 26-30, 1960, at Donelson, Tennessee
*46th Meeting: June 28-July 2, 1962, at Miami Beach, Florida
*47th Meeting: June 21-25, 1964, at Watertown, Massachusetts
*48th Meeting: June 26-30, 1966, at Salt Lake City, Utah
*49th Meeting: June 23-27, 1968, at Toronto, Ontario, Canada
*50th Meeting: June 28-July 2, 1970, at New Orleans, Louisiana
*51st Meeting: June 25-29, 1972, at Miami Beach, Florida
*52nd Meeting: June 23-27, 1974, at San Francisco, California
*53rd Meeting: July 5-9, 1976, at Louisville, Kentucky

* Copies of convention proceedings or selected papers for these meetings may be purchased by writing to the Association for Education of the Visually Handicapped, 919 Walnut Street, 4th floor, Philadelphia, Pennsylvania 19107. Copies of the Indexes for 1922-1930, 1931, 1932-1940, and 1944-1960 are also available.

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EDUCATION OF THE BLIND: USING THE PAST TO CHALLENGE THE FUTURE

Finis E. Davis

American Printing House for the Blind
Louisville, Kentucky

It is most appropriate that this Bicentennial year of our nation should find the Association for Education of the Visually Handicapped gathered together on the first day of our nation's 201st year -- not to discuss our past achievements -- not to predict the future. Rather, we hope to review the past and preview the future so that we may continue to broaden and brighten the horizons of the children with whom we work.

Probing into concepts which were and still are of great concern may give us an overall and underall picture.

Our conference theme "Building in 1976 -- On the Past -- For the Future" puts us of today squarely where the action is -- *Building*. Building requires a dream, a plan, building materials tested and found true, builders who can read the plan and who are "steady-on" for seeing the job completed. But building also requires the innovator who knows when there is need for change in the plan, need for growth, need for moving out, need for a new dream, perhaps even a need for turning back. Underlying all, it would seem, is *purpose*! No matter what or when or where, *building has to have a purpose.*

As we pursue our specific topic of the evening, "Education of the Blind: Using the Past to Challenge the Future," we are aware of the purpose which has driven each individual who has been challenged or who has challenged. That purpose was to improve the status or lot of the blind individual(s) for whom there was concern at that time and in that place. On occasions there was disagreement as to how best to achieve that purpose. Not infrequently an individual would disagree with himself -- change his mind, so to speak. Let us glance into the past -- review some facts that may challenge our thinking for the future.

Farrell, in his book, *The Story of Blindness* (1965), reminds us that there have been "stars" among the blind and that often they have pointed the way. Yet those with sight admired those "stars" but were not always ready to accept them as fellow beings. Prospero Fagnani, performing his duties as a canonist with distinction, was dubbed by his superior as "the blind yet most far-sighted doctor." *Not* just as the most far-sighted doctor. According to the canons of the time, the blind, orphans, widows, and the aged were classified as "miserable" persons from whom the Church expected nothing. Fagnani felt that the Church held that "the blind in mind" were more to be pitied than "the blind in the eye." He further stated that "those without sight should be treated like seeing people and *helped according to their need rather than on the basis of their blindness*." This from a blind man who died in 1678.

Yet for almost 300 years some of us have continued to think of and act toward "the blind" as if all individuals who were visually impaired could be characterized as one entity. Nicholas Saunderson, born in 1682, became blind when only a year old. His unusual ability in mathematics led him to develop a ciphering board for the rapid solution of mathematical and geometrical problems. He later was permitted to use its library, but was not admitted as a student in Cambridge University. Charitably he was given permission to learn but doors were not opened for him to earn a degree. Because he was one of few who understood Sir Isaac Newton's principles, Saunderson was allowed to teach, but not until Queen Anne bestowed a degree on him did the opposition to his teaching in the University subside. A great encyclopedist of the 18th century, Denis Diderot, in his *Letter on the Blind for the Use of Those Who See* (AAWB, 1966, pp. 201-31) advanced the opinion that the senses of the blind are not especially sharpened by the loss of sight, but that the loss of sight compels the increased use of the remaining senses; that education ought to be built on what the blind man *has* rather than on what he has lost; and above all else that he should keep active all possible contacts with the objective world. This blind "star" two centuries ago challenged with concepts still not accepted by all even among those who labor in our field of interest.

Throughout the years, educators have challenged or been challenged by many of the same challenges we have today among the concerns about which we may not all be in complete agreement.

Johann Wilhelm Klein, a former district director for the poor, recognizing that lack of education was a cause of poverty among the blind, in 1804 opened a school for blind children and developed a program with royal support. He applied sound principles to the education of the blind and, when they could not be served within his school, he made early attempts to have blind children accepted in schools for the seeing. He was among the first to know the importance of securing able teachers and he produced a teacher's manual (Lowenfeld, 1975).

When Valentin Hauy, in 1784, founded the first school in the world for blind children, he set the precedent of taking his pupils out to give demonstrations and concerts. Fifteen schools had been established in Europe before Hauy died in 1822. These early schools differed widely in methods and, to some degree, in objectives, but there was a common desire to alleviate the lot of blind by beginning with the children (Farrell, 1965).

When Dr. Samuel Gridley Howe, in 1830, visited the European schools, he felt that government interference handicapped the choice of teachers in one instance. Another he judged as having "the reputation of being the best; but if one judges the tree by its fruit, . . . this will not be his conclusion." Still another institution he felt had as its "great fault . . . the diversity of employment to which the pupils are put; and the effort made to enable them to perform surprising but useless tricks." He further charged that "The same degree of intellectual education is given to all, without reference to destination in life. . . " Dr. Howe was in agreement with the stated objective of the Bristol School which was "not to employ the blind after being educated, but to teach them the means of getting a living by work." In general, Howe felt that the European schools he observed were "beacons to warn rather than lights to guide (Farrell, 1965)."

Dr. Howe did formulate some positive convictions that were to guide him as he set about organizing a school for the blind in Boston. He believed:

1. That each blind child must be considered as an individual and be trained in accordance with his personal ability and opportunity to use the training in his community.

2. That the curriculum of a school for the blind should be well-rounded and conform insofar as possible to that of the common schools . . .

3. That the main objective must be to train blind youth to be able to take their places in the social and economic life of their home communities as contributing members.

In New York's education of the blind there seem to have been problems in getting the work started. There was difficulty in getting people to serve on a Board of Managers. The purpose was not clear to some. There were those who "assumed that it [a school] was an asylum for the indigent blind, erected for the purpose of testing by actual experiment the lowest possible sum upon which the subjects could be fed and clothed." Not until 1890 was the supervision of the New York Institute for the Blind transferred from the Department of Welfare to the Department of Education -- at that time the name was changed to the New York Institute for the Education of the Blind and the superintendent became the principal. The curriculum became the same as that followed by the State Board of Education and blind pupils took the Board of Regents Examinations given to all public school children (Farrell, 1965).

Edward E. Allen's moving of the Pennsylvania Institution for the Instruction of the Blind from downtown Philadelphia to Overbrook in 1899 marked the beginning of the exodus of schools for the blind from cities to suburban areas.

Working together, the heads of the pioneer schools in Boston, New York, and Philadelphia wielded great power in the field of education of the blind. It was Dr. Howe, though, who took the lead in urging the education of blind children in other parts of the country. In spite of his criticism of the European school for its "parades and shows," Dr. Howe set out on a series of trips which took him before the governing bodies of seventeen states. An exhibition and demonstration given by three of his students proved so effective that "provision for the education of the blind was made before the representatives of the people had time to wipe the tears from their eyes." But Dr. Howe did more than move the legislators to tears. He sent books, maps, supplies, and a trained teacher. Thus it was that Ohio became the first state to make public provision for the education of its blind children. By 1870, there were

23 residential schools. A century later, 50 schools provided for the education of the blind in every state. Nearly all were state-supported and maintained institutions. Even those which were privately endowed and managed received state aid in some form.

While residential schools had been for over a century the dominant form of education for blind children in this country, another form had been emerging. Provision through day classes for blind children in the public schools was begun more than three-quarters of a century ago. This move came chiefly in larger cities.

The idea of educating blind children in the common schools was almost as old as was the concept of residential school programs. Johann Klein, shortly after opening his school in Vienna in 1806, attempted to have visually handicapped children admitted to schools for the seeing. In Edinburgh, from 1834 to 1836 blind pupils were placed in the classes for seeing pupils. In 1879, day classes for blind children were started by the London School Board. In 1936, however, a survey was made and it was decided that there were not enough children to make classes practical in any but urban areas. The report also stated that the education of blind children, especially young children, was of too specialized a character to permit its being "treated as an appendage to the scheme of education in the ordinary elementary schools." The law of 1944 required that all blind children in England be educated in residential schools. Scotland recommended the same in 1950 (Farrell, 1965).

In the United States, there was no overall turning-back, once the movement into day school programs began. While acceptance, experimentation, and rejection have taken place in spotted areas, the overall picture has been a gradual increase of public school enrollment of blind students.

The first day class in this country was opened in Chicago in 1900 in response to parent demand. The pattern set by Chicago has been followed by many others. A room was set apart with a special teacher. "Insofar as possible" the blind pupils shared in the classes of the seeing. In 1905 Cincinnati opened a segregated class but adopted the cooperative plan in 1913. In 1909, Cleveland's braille classes were begun. Under the leadership of Robert B. Irwin much was done to supplement the day school's program. The blind students were given extra instruction in music and crafts on Saturday mornings. The teachers, under Irwin's leadership, supervised the pupils' table manners at lunch, took the blind students on weekend hikes, and organized a summer camp to which parents were invited. In 1909 New York City opened braille classes as part of a plan to make provisions in the program of public education for all handicapped children. In 1912 Detroit opened its first day class. In 1917 Los Angeles made provisions for its visually handicapped in a school set apart from those for seeing boys and girls. In 1919 classes were begun in Minneapolis and St. Paul. In 1920 Seattle opened a cooperative plan program. When the program became a segregated one, many of the pupils returned to the residential school.

New Jersey, from the beginning, has supported and supervised braille classes but has also enrolled some of its blind students in residential schools of neighboring states. George F. Meyer, when head of New Jersey's work for the blind, proudly pointed out the philosophy of that state. "Our blind children from the beginning, develop the concept that they are, primarily, citizens of the school or of the community, and only secondarily, blind (Farrell, 1965)."

Reviewing reports from our own organization, we discover that when heads of residential programs were challenged by the day school programs there was concern among some about the quality of education that could be offered in the day classes. But the residential plan had been early challenged by the very ones who had dreamed of the plan in the beginning. With the welfare of blind children as his all-consuming purpose, that great builder, Dr. Howe, and others, had become concerned that too many of their pupils, after years of separation from their families and home communities, were finding it difficult to take the contributory place in life that was the main objective of their education.

In 1866 when making the address at the laying of the cornerstone of the New York Institution for the Blind in Batavia, Dr. Howe made very clear his feeling that institutions were "unnatural, undesirable, and liable to abuse." He further stated that there should be as few institutions as possible. He felt strongly that the family was the unit of society and that it was the place for the early education of the child.

From an educational point of view, most of us would agree that residential programs have maintained standards at least as high as the common schools of their states. Some have superior equipment, quality instruction, and excellent teachers. As a matter of fact, there have been those who have felt that some of our residential graduates were "over educated" in that their secondary education fitted them for a place in the working world which was far beyond the job opportunities open to the blind. That, too, was a challenge to Dr. Howe just as it is to many of us today. Education of the blind in Dr. Howe's time was outrunning the opportunities for employment made available by the seeing. Today many educators feel that college programs offered our blind students are frequently less than practical.

In the United States, from 1900 until about 1915, residential programs were challenged by an initial growth period on the part of day school programs. At that time about 10 percent attended day school classes and 90 percent remained in residential programs. This distribution remained fairly constant and the day school programs offered were largely within the cooperative plan until the first retrolental fibroplasia children reached school age. From 1950 on, the total number of blind children attending school rapidly increased (Lowenfeld, 1975). It was then that we began to see additional challenges as to programs, materials, and services needed to build according to the best possible dreams and plans.

Resource rooms, itinerant programs, mainstreaming, supportive services, enrollment of younger children, buildings, equipment, teachers, materials for the multi-handicapped visually impaired, more and more involvement with federally funded programs, utilization of low vision, Special Education Instructional Materials Network, Area Learning Resources Centers, specialized offices, National Center for Educational Media and Materials, National Instructional Materials and Information System, mandatory legislation are all terms, terms which affect our lives. But more important, terms for the dreams and plans some builder had for one purpose.

Today we have challenges never faced by those who pioneered in our field. From those early beginnings and sometimes slow starts, we have on the APH rolls more than 27,000 blind children for whom we are responsible. This does not account for those for whom we have no registration.

Today we face the challenges of the past: Legislation, financial support, exploitation of children, the need for excellence of staff, training for social and economic independence, programs suited to individuals with their special capabilities and their opportunity to use that training. Educators must plan for the responsibilities related to daily living skills just as table manners were a concern in the past. We plan for special health needs and for recreational needs. The involvement and guidance of parents is surely a priority among the challenges we face. After years of concern on the part of the giants who have pointed the way, we must answer the challenge of changing the attitude toward blindness and "the blind" which we know does exist all around us -- perhaps even in our very midst. We will not always agree as to the best plan. But when dreamers, planners, and builders come together for one purpose, I believe that purpose can be accomplished.

For the next few days you are going to be challenged by a very fine program. Whatever you choose from this challenging program, let us all keep in mind that one purpose alone undergirds all our deliberations. It is the one purpose that has been the guiding one from the first sentence of any history on the education of the blind -- the improvement of the lot of each blind individual with whom we work.

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MAINSTREAMING VISUALLY HANDICAPPED CHILDREN AND YOUTH: YESTERDAY, TODAY, AND TOMORROW

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Since the terms "visually handicapped" and "mainstreaming" have different meanings to many people, it seems advisable to define these terms as they will be used in this paper. The term *visually handicapped* will be used to describe those children and youth who have such severe impairments or limitations in their vision or in their use of it that they are handicapped in obtaining an appropriate education. It is assumed that the visually handicapped child will have received the best possible medical/surgical treatment and optometric correction and that these services will continue throughout his life. It is, of course, always hoped that through such treatment, he may at some time have an improvement in his functional vision which may remove him from those who are educationally visually handicapped. This paper then, will not be concerned with all of the visually impaired or all of the visually limited, but only those who through an educational diagnosis are found to be visually handicapped. In other words, a child's reading on an eye chart on a particular day no longer determines whether or not he requires a special education. Likewise, a measurement of visual acuity is not considered an appropriate means of determining if he requires print or braille. In this paper, those who are able to use print as their chief reading medium will be referred to as partially seeing. If permitted to do so, most of these will probably read ordinary print by holding the material closer to their eyes. Those who after careful sequential training in the use of their vision are found unable to use print as their chief medium are considered educationally blind. It is assumed that all visually handicapped children will be taught and encouraged to use all of their senses insofar as possible as avenues of learning.

In this paper, the term *mainstreaming* is used to describe an education program in which visually handicapped children and youth are placed in regular classes with supplementary services and/or special instructional materials and equipment provided by a trained teacher of the visually handicapped. The visually impaired pupil who does not need either supplementary services or special materials, in the opinion of the writer, would not be considered handicapped and should not be included in the register of handicapped children.

Mainstreaming: The Past

Although individual visually handicapped children and youth have attended schools with normally seeing classmates, probably since time immemorial, it was not until 1900 that educational programs to include blind children in regular classes were established in the United States. Special classes for the partially seeing were begun in 1913. The first classes of each type were initiated through the leadership of heads of residential schools for the blind. Actually, long before then, educators of the blind had considered some of the advantages of regular school for some of their pupils. One of the most vocal in this respect was that great pioneer, Dr. Samuel Gridley Howe, who in 1872 sent a letter to the Second Convention of the American Instructors of the Blind stating: "Depend upon it, one of the future reforms in the education of the blind will be to send blind children to the common schools, to be taught with common children in all those branches not absolutely requiring visible illustration....We shall avail ourselves of the special institutions less and the common schools more."

Of course, Dr. Howe's prediction never came true. Although there was an increase in the number of public day school programs between 1900 and 1925 and again between 1950 and 1975, there was also a continued development of residential schools, both in the number of schools, the size of enrollment, and in many places, the extension of use to 11 or 12 months of the year.

This writer had the privilege of knowing some of the first teachers and many of the first pupils in those early day school programs in New Jersey, Ohio, and Minnesota. From their descriptions, it seems apparent that those early programs were truly resource rooms. Only the beginners spent much time in the resource room. The others returned only for special instruction that the special teacher alone could give. In many cases, the older students came in on Saturday for special help in daily living skills or in other areas so that they would not need to miss time from the regular classes. Some residential schools also had Saturday classes for older students even as late as 1936. Since the programs were new, everyone in the school from the janitor to the principal was challenged to include the blind children in all activities. This was not true of the classes for partially seeing children. In those days, it was thought that such children would harm their vision through use, and physical activity was severely limited. Their classes were similar to the one-room school with one teacher covering all grades for 10 to 20 children. She could not give them the highly individualized instruction that the teacher of the blind gave to the one or two in her room at any one time.

As time moved on, however, there was a new understanding of the importance of the use of vision and the old classes for the partially seeing became resource rooms. The children were mainstreamed, and it was discovered that many of them who had been placed in the sight-conservation classes because they had high myopia, or a certain visual acuity reading, really weren't handicapped. They did not need special materials or the help of an especially trained teacher. Unfortunately those halcyon days for both the blind and the partically seeing children did not continue in some places. Gradually, with changes in school personnel at the same time that regular classes were overcrowded, the visually handicapped children spent more and more time with their special teachers who attempted to teach all subjects for all grades in a school day shortened by the bus schedules. Some of the larger cities, where the problem was most acute, discontinued neighborhood classes in favor of transporting all visually handicapped children to one school. Children were grouped according to grade level, thus relieving the teachers and providing some peer relationships. In some other cities, day schools for all of the handicapped developed. Of course mainstreaming was impossible in either situation.

Fortunately, many programs did continue on the true resource room pattern. Fortunately, also, itinerant teacher and teacher-consultant programs had been established before the mid-forties when the first of the many thousand children blinded from retrolental fibroplasia reached school age. These two types of programs, which may be considered the "least restrictive alternatives" were developed in greater numbers than any other type during the period of 1956 to 1963. During the past twenty years, probably more children and youth have enrolled in these two types than any other type of program for the visually handicapped. These programs, where each child attends his neighborhood school with supplementary services and special instructional materials and equipment provided by a fully trained teacher of the visually handicapped, would seem to represent true mainstreaming. But these programs were not without problems. Most of these programs as well as many of the resource room pattern ones were established during a period when there was a very serious shortage of trained teachers of the visually handicapped. Some of them employed teachers who had only a summer course and no experience. Although, with time, they gained the experience and took additional training, their students suffered during the early years. In some instances, the pupils did not have the textbooks and other materials and equipment when they needed them. Too often the teacher was assigned too many pupils, scattered over too large a geographic area to get to the children when needed. Most unfortunately, orientation and mobility and daily living skills were neglected.

What a sad commentary on educational programs for the visually handicapped is made by the recognition that across the country, prevocational programs have had to be developed to provide postsecondary youth with the basic living skills. These programs also include graduates of residential schools.

Throughout the years, but especially within the last five, since the children affected by the rubella epidemics of 1963-65 have reached school age, public day school programs have served multihandicapped children. However, since these programs are usually self-contained, they will not be discussed here.

It should also be noted that over the years some residential schools have arranged for some of their pupils to attend the local schools for part or all of their academic work.

Today

Despite the grim problems that some of the efforts at mainstreaming have experienced, many also have been quite successful. Throughout the country may be found graduates of public day school programs who are assuming roles appropriate to their abilities in the mainstream of their communities.

The situation today is a great improvement over yesterday. Whereas the teacher shortage continues, it is not nearly as acute as it was 10-15 years ago. Today over 20 colleges and universities are graduating about 300 teachers a year. In addition, another half-dozen offer some courses. Summer programs have increased to provide training for teachers already employed, and special study institutes have been provided to keep teachers abreast with new developments in the field, such as training for utilization of vision, and the most recent to begin this summer, teaching children to read with the Optacon.

More orientation and mobility instructors are available, some with dual training so that they also can serve as itinerant teachers, thus serving children in the more rural areas. There are at least 15 states that maintain Instructional Materials Centers for the Visually Handicapped, and there is the APH Resource and Reference Center.

However, there are many children and youth who are unserved or inappropriately served. There are many estimates of the number of visually handicapped children. What would seem to this writer to be a rather conservative estimate was published in the June 1976 issue of *American Education,* which suggests that for ages 0-19, there are 66,000, of whom 23,000 are unserved. These figures do not include the deaf-blind and other multihandicapped. If these are added to the figures, the estimate would possibly read 85,000 with 35,000 unserved. That would leave about 50,000 currently being served, or about twice as many as are registered with APH. It may be assumed that these are visually handicapped children and youth who do not fall within the Printing House Quota definition, which is an industrial blindness definition.

But the real concern is for the estimated 35,000 unserved and the unknown number inadequately served. Probably this number includes a substantial group of infants and preschool children for whom no services have been developed. There may also be a large number of children and youth who have been vegetating in the back wards of state institutions and hospitals. And it's quite possible that there are many pushouts who didn't appear to be acceptable for existing programs, or adolescents who dropped out because there were inadequate or irrelevant programs. During this year, state departments of education have been developing child-find procedures. By another year there may be better data and there may also be a sharp increase in school enrollments.

The Future

On November 29, 1975, President Ford's signature made PL 94-142, known as the Education for *All* Handicapped Children Act of 1975, the law of the land. This landmark piece of legislation states: "It is the purpose of this Act to *assure all* handicapped children have available to them a *free appropriate education* which emphasizes special education and related services designed to meet their unique needs, to assure that the rights of handicapped children and their parents or guardians are protected, to assist states and localities to provide for the education of *all* handicapped children, and to assess and assure the effectiveness of efforts to educate handicapped children."

The President's signature followed overwhelming endorsement of the House-Senate Conference agreement. The House vote was 404 to 7 and the Senate voted 87 to 7. At least in this case, it seems apparent that the Congress has a deep concern for the education for all.

It is not the intent here to review this entire piece of very comprehensive legislation. There is not enough time, and it would be inappropriate since task forces from the field of special education and consumer groups are still involved in making recommendations regarding guidelines for the administration of the Act. The law is very specific about several points which would seem to affect the future education of the visually handicapped children.

The law specifies that *all* children means "all children who are handicapped, regardless of the severity of their handicap, who are in need of special education and related services." It also specifies that priorities for providing the services shall be given first to children who are not receiving an education and second, with respect to handicapped children, within each disability, to the most severely handicapped who are receiving an inadequate education.

The law clearly defines what is meant by special education and related services: "The term 'special education' means specially designed instruction, at no cost to parents or guardians, to meet the unique needs of a handicapped child, including classroom instruction, instruction in *physical education,* home instruction, and instruction in hospitals and institutions." The term "related services" means transportation, and such developmental, corrective and other supportive services (including physical and occupational therapy, recreation, and medical and counseling services, except that such medical services shall be for diagnostic and evaluation purposes only) as may be required to assist a handicapped child to benefit from special education, and includes the early identification and assessment of handicapping conditions in children.

The law does *not* state that *all* children shall be educated in the mainstream. It says that there shall be

> procedures to assure that, *to the maximum* extent appropriate, handicapped children, including children in public or private institutions or other care facilities, are educated with children who are not handicapped, and that special classes, separate schooling, or other removal of handicapped children from the regular educational environment occurs only when the nature or severity of the handicap is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily.

The Congress was obviously greatly concerned with the rights of parents and children in such aspects as due process, impartial hearings, participation in planning, confidentiality and careful evaluation procedures:

> procedures to assure that testing and evaluation materials and procedures utilized for the purposes of evaluation and placement of handicapped children will be selected and administered so as not to be racially or culturally discriminatory. Such materials or procedures shall be provided and administered in the child's native language or *mode of communication,* unless it clearly is not feasible to do so, and no *single procedure shall be the sole criterion for determining an appropriate education program for a child.*

Parents are also to be involved in the child's individual plan (probably one of the most exciting parts of the act):

> The term "individualized education program" means a written statement for each handicapped child developed in any meeting by a representative of the local educational agency or an intermediate education unit who shall be qualified to provide, or supervise the provision of, specially designed instruction to meet the unique needs of handicapped children, the teacher, the parents or guardians of such child, and whenever appropriate, such child, which statement shall include (A) a statement of the present levels of educational performance of such child, (B) a statement of annual goals, including short-term instructional

> objectives, (C) a statement of the specific educational services to be provided to such child, and the extent to which such child will be able to participate in regular education programs, (D) the projected date for initiation and anticipated duration of such services, and (E) appropriate objective criteria and evaluation procedures and schedules for determining, on at least an annual basis, whether instructional objectives are being achieved.

Team planning and evaluation is not a new idea to educators of the visually handicapped. Dr. Salvador DiMichael, speaking at a biennial conference of this organization, held in Columbus, Ohio, twenty years ago stated:

> Essentially two things are to be sought through the use of the team. First, we want a comprehensive evaluation of the individual so that a program of treatment and training may be solidly established; the team members should come together to discuss the findings and decide on recommendations. Secondly, the team concept should be extended to include all persons who deal with the individual so that a consistent method of dealing with the child is applied by all who work with him, making it possible to evaluate the effectiveness of the recommendations.

Other interesting possibilities in the law include provisions for children ages 3 to 5 and 18 to 21; funding private school placement, or providing services to an individual child enrolled in a private school; combined school districts providing services or the state agency doing so if they are unable or unwilling to do so. Your Congressman should be able to supply you with a copy of the law and a copy of the conference report which goes into some detail regarding the intent behind some of the requirements.

How does all of this appear to affect the future of mainstreaming for visually handicapped children and youth? Let us play being visionaries.

1. It seems probable that as each child is given a careful evaluation, an individualized plan developed and evaluated, it will be found that quite a large number of children are not getting an appropriate education and that there will be some movement among various facilities and some new ones developed; and

that through this process programs will be able to recognize what they are able to provide for a particular child and what some other program might offer. It might be found that most, if not all residential schools, because of their size, cannot afford to have the variety of staff to provide the type of curriculum needed for academic high school students. And it may be found that most public or private day schools cannot provide the type of vocational high school programs needed most by blind youth.

Eventually, if not now, educators may begin to believe what this writer recommended thirty years ago regarding:

> the need for flexibility in selecting facilities. That facility should be selected which fulfills a particular need, at the time of the need, and for only as long as--in the light of the total situation--it is fulfilling this need. Switching from one facility to another should not necessarily be considered as a failure of the first facility but rather as a success in having solved the problem for which it was selected, or as an outgrowth of new developments.

2. It seems probable that more public school systems will be developing programs for 3- to 5-year-olds and that itinerant teachers and mobility instructors will provide individual help to the blind child and guidance to the teacher and parents. It is hoped that more programs will be developed to provide early intervention for the 0- to 3-year-olds. Who knows what may happen in the development of blind children if they can be encouraged to explore their environment in infancy through such things as the Kay device now modified for preschoolers?

3. It is hoped that more intensive programs will be developed in state institutions and hospitals to prepare children to move out into less restrictive programs as they are developed in their communities or in residential schools. Who knows, some of them may even be partially mainstreamed.

4. Visually handicapped children and youth in the mainstream and others will have available to them equipment that has been developed, such as books taped with compressed speech, the Optacon, the Kurzweil print-to-sound reader, the Argonne braille reader with which a print book can be put on a five or seven inch tape and played back with the speed of the braille

tape adjustable according to the ability or mood of the reader, talking and braille calculators, and more to come. It is even possible that sometime in the future a partially seeing person may be able to dial a central library and have the book appear page by page on a television screen, or a blind person may do so and have it transmitted by radio, or for some both aural and visual reading may be transmitted simultaneously through a television set-up. But that is all in the far future...yet to be invented, but possible.

5. Perhaps most important of all, there will be better trained personnel. Regular class teachers will throughout their preservice training have had an orientation to their role in serving handicapped children in the regular classroom. All school personnel will have a continuing inservice training regarding the importance of providing maximum participation of handicapped children and of individualized instruction for all children within the classrooms. Teachers and others will have had training in how to participate on a team and how to evaluate the success of their teaching. Preschool personnel will have been trained to work with parents in early intervention and in resolving some of the emotional upheavals involved in learning that their child is visually handicapped. Quite probably, itinerant teachers and teacher-consultants will have a longer, more intensive period of training to enable them better to handle the many aspects involved in this type of program, such as counseling, teaching daily living skills, public relations, and how to supervise paraprofessionals. It seems possible that paraprofessionals will have been trained to carry on some of the less professionally skilled tasks that now consume undue time for the itinerant teachers and teachers of the handicapped in all program patterns.

There would seem to be no doubt that this landmark legislation will bring about many changes in the education of visually handicapped children and youth. The future looks rosy for those children and youth who happen to be visually handicapped. Ours is the challenge to take advantage of the many provisions that have been provided through the Education for All Handicapped Children Act and other resources through which we may help make it possible for visually handicapped children to have an appropriate education which will enable them to assume roles of participation in society according to their individual abilities and choice. Ours is the challenge to profit from the trials of the past, the advances and the problems still with us today--to be firm in resisting, actively opposing the removal of visually handicapped children from programs that provide some of the services they need to so-called mainstream programs that provide no services. Ours is the challenge to have enough professional security to permit the flexibility to say--after careful evaluation --"at this time that child may be better served in some particular program other than ours."

If we meet the challenge--and I believe we will--each visually handicapped child will have an opportunity to have the best we have to offer him at each time in his development, and the past will truly be but a prelude to the future.

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EDUCATIONAL MATERIALS: YESTERDAY, TODAY, AND TOMORROW

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Today I would like to review with you the problem of educational materials for our field. I want to reflect, briefly and in a global way, upon the past; to dwell in some detail upon the present; and to attempt, briefly, to peek into the future.

When we review the history of providing materials for the education of visually impaired children, one fact stands out. This is the continuing burden placed on the classroom teacher to provide materials for child use. In the written history of our field, these heroic efforts are largely unrecorded. Better records do exist, however, of formal efforts to provide teachers first with texts and other books, then with student tools, and finally with special subject material designed to meet the developmental needs of the visually impaired. It is these formal efforts to provide materials I want to consider. Consequently, most of my remarks will reflect the history of the American Printing House.

A good picture of early formal efforts to provide educational materials can be gleaned from the reports of the meetings of this Association. Review of these reports indicates that until 1920 formal efforts to provide educational materials were concentrated almost exclusively on provision of tactile books. During this period progress was severely impaired by lack of standardization of the tactile codes in which books were printed. Initially, individual schools attempted to produce their own books. For example, Perkins had a press as early as 1835. However, production and exchange of books by schools was an inefficient process and the need for more centralized efforts became apparent. Several states cooperated to establish the American Printing House for the Blind in 1858.

This project really did not get underway until 1866 with publication of its first book. By the early 1870s the Printing House was a going concern and its future as a permanent source of material was guaranteed through passage in 1879 of the Act *To Promote the Education of the Blind*. This law provided federal funds for costs of labor and materials to manufacture books and apparatus needed in education of the blind. Perkins continued to be a source of books during this time and in 1879 the Howe Press came into being. Other groups, such as the National Association for Publishing Literary and Musical books for the Blind, existed as formal sources of educational materials.

As indicated earlier, emphasis during this early period was on publication of tactile books. As late as 1880, the APH catalogue mentioned only braille slates, cursive writing guides, and maps as additional materials. Howe Press brought out a braillewriter in 1900 and supplied slates and a small number of other tools. Even by 1920, the only additions in the APH catalogue were spelling frames, parquetry boards, sewing cards, and pegboards.

At an informal conference of the trustees of the American Printing House held at the Vinton, Iowa, meeting of the Association of Workers for the Blind in 1921, it was agreed that when funds became available, the Printing House should become a distributor of apparatus. Needs for writing tablets and braillewriters were expressed as well as the need for thorough testing of the apparatus to be produced. However, at the subsequent meeting of trustees of APH in Louisville, the following month, it was determined that because of lack of manufacturing space, these devices could not be produced at that time. Little progress was made toward production of apparatus in the 1920s. The 1930 catalogue of APH listed script-writing materials, spelling frames, slates & styli, and maps. Tests and measures made their appearance during the '20s.

In 1930, a change in administration occurred at the Printing House and with it came renewed interest in production of tangible apparatus. During this decade a braillewriter, arithmetic type slates, the Beetz Notation Graph, and talking books were added to the list of APH products.

The decade starting with 1940 was replete with problems arising from materials and manpower shortages. However, during this time, an additional arithmetic type-slate and the New Hall Braillewriter were made available. This decade was critical in one respect. APH started publication of large type textbooks.

For the American Printing House, the present, in terms of expanded production of educational materials, really began in the 1950s following another change in administration. Using its own funds, APH initiated research. In 1951, the Education Research Committee was formed from among the ex-officio trustees of APH, and the

Department of Educational Research was established. In 1954, the Tangible Apparatus Committee was formed to oversee the development and manufacture of these materials. By the end of the '50s, APH produced about 50 different educational aids as well as books in braille, large type, and recorded form. Included among the aids was a wide range of writing tools and materials, several arithmetic materials, a wide variety of maps and globes, and aids for music.

To my mind, the present was brought to full flower after 1960 through a variety of federally legislated programs that supported educational research and development. Administrated by the Department of Health, Education and Welfare through such agencies as the National Institutes of Health, the Rehabilitation Services Administration, and the U.S. Office of Education, these programs provided funds for both study of the behavioral capabilities of the visually impaired and the translation of these findings in the development of educational techniques and materials for their use. A milestone in these programs was the creation of the Bureau for Education of the Handicapped as part of the Office of Education in the early 1960s.

The impact of these federal programs on special education generally has been tremendous. From 1960 to the present, they have augmented APH resources to bring into being a mature program of educational research and development. In this program, extensive research on tactual perception, tactual reading, and learning through listening has been conducted. Most of these studies have yielded results that can be applied to improve design of educational materials.

Since 1966, the Bureau for Education of the Handicapped of the U.S. Office of Education has supported broad educational materials development efforts at APH. Along with efforts supported by APH funds, these have resulted in a six-fold increase in the number of aids available from APH, increasing from about 50 in 1950 to 290 in 1976. Federal funds have resulted in educational products for mathematics, science, social studies, braille reading, low vision training, sensori-motor readiness, language development, educational measurement, plus games and other materials. APH-supported research has developed processes for computer translation of literary braille and music and for producing flexible discs and short-run large type. APH funds have supported development of major tools to include the Lavender Braillewriter, the 4-track cassette players, and the Variable Speed Control.

A natural result of intensified research and development activity is that we have been able to bring our materials development procedures to a high level of maturity. This growth, of course, is not restricted to the field of the visually impaired. This maturity is reflected in how we define our needs and set priorities, how we carry out the formative stages of development, and in the ultimate evaluation of materials in the field.

In determining needs and setting priorities we have come to work very closely with our consumers. At the highest level, this interaction occurs through our Educational Research Committee and Educational Aids Committee composed of administrators at the state level. Every curricular area in which we do materials development is represented by a group of teachers and teacher trainers who help set priorities. At the present we are cooperating with the Bureau for Education of the Handicapped in a nation-wide survey of educational materials needs for handicapped children. It is hoped this survey will reach 130,000 teachers of handicapped children. We have helped Educational Testing Service, the prime contractor, to identify relevant areas for questioning, to design the questionnaires, and next year we will write the report for the visually handicapped. Many of you at this meeting will receive these questionnaires in the fall. Let me urge your serious cooperation in this study because its results will be used by APH and others to identify the materials to be developed for the next several years.

Procedures for development of materials have become well defined and integrated. Once needs are identified and priorities assigned, specific materials development projects can be undertaken. In these projects the procedure most often followed is that materials objectives are defined, specifications for materials that meet these objectives are written, first designs of materials are made, these are reviewed by experts, materials are revised, then they are pilot tested with students, and revised again.

These cycles are followed until the project staff is satisfied that the materials are ready for field evaluation. During this sequence, consumers are participants. Almost every project has a group of teachers, chosen nation-wide, who take part in initial materials development and review. The team we have formed for development of a primary braille reading series is an example. It consists of persons with the following backgrounds: One person with long experience in writing primary reading materials, one person with nationally recognized experience in reading research, three persons with long experience in teaching braille reading and in teaching others to teach, one person with long teaching experience and administration experience at the state level, and two classroom teachers of braille reading.

Every product that the Printing House develops is subject to some kind of field test. Unfortunately, the small numbers of children who are visually impaired and their wide scatter seriously limit our ability to make strictly experimental comparisons of materials use outcomes. It is possible to evaluate empirically the legibility and manipulability of the materials we make. Evaluation of materials by teachers while actually using them with children is a procedure that has proved fruitful.

The maturity of our thinking is reflected in the fact that we are no longer content to restrict ourselves to the publishing of books, design of tools, or tactile analogues of sighted materials. We are designing specific instructional sequences for the visually impaired. Experience has taught us the futility of designing broad curricula in any area for the visually impaired. Their wide scatter through many school programs makes the probability of wide adoption of any single curriculum slight. However, we can design small specific instructional packages that can be integrated into any curriculum.

Other groups are using federal funds to develop sophisticated educational materials packages for the visually impaired. This year APH produced a recorded typing program for the blind and career information and training activities which were developed elsewhere. Applications of technology sponsored through federal programs have resulted in development of sophisticated tools such as the Optacon. Today, a number of special versions of electronic calculators are available that display results of calculations in braille, spoken, or large type formats. Many of these devices are available on a commercial basis.

Educational materials are of no use if consumers are unaware of their existence. Present times are characterized by strong state and national efforts to provide information to teachers about available materials. A pioneering effort of this kind was the establishment of the Central Catalogue of Volunteer Produced Textbooks at APH in the early '60s. The Central Catalogue, which presently contains about 80,000 titles, provides educators nationwide access to the single copies of books produced by volunteers in braille, large type and recorded form.

In the mid-'60s, the Bureau for Education of the Handicapped set up an Instructional Materials Center Network. A major purpose of this Network of primarily state and regional centers was to supply information about materials available to teach handicapped children. This Network was a major stimulus for setting up the approximately 15 state Instructional Materials Centers for the Visually Impaired that exist today. One national Instructional Materials Reference Center for materials information for the visually impaired was set up at the Printing House. This national center supplied information about volunteer produced, APH produced, and commercially produced materials and also loaned demonstration sets of materials.

In 1974, the Instructional Materials Center Network was replaced by a new materials network composed of the National Center for Instructional Media and Materials for the Handicapped, 13 Area Learning Resource Centers, and four Special Offices. This network has several major functions: To develop instructional materials, to develop means to train teachers to use media and materials, to provide information on available materials, to distribute materials for examination purposes and training, and to aid states in setting up their own media centers and media use training programs.

Of particular interest to this group are two aspects of this system, the Special Office for the Visually Impaired and the National Instructional Materials Information Services (NIMIS). The Special Office is located at the American Printing House and NIMIS is located at the National Center for Educational Media and Materials for the Handicapped at Ohio State University.

The Special Office for the Visually Impaired has two primary functions. One of these is to identify materials which are available for education of the visually impaired and to write abstracts describing these materials for inclusion in the NIMIS system. The other is to adapt available materials or develop new materials where these are needed for education of our children. This is one of the broad research and development supports for APH mentioned earlier. What is more important from the informational standpoint is the materials identification and abstracting.

The Special Office for the Visually Impaired is presently organized to monitor the catalogues of the majority of producers of child use materials in this country.Catalogues of producers of materials for the visually impaired in other countries are also monitored. Materials are evaluated using standard criteria. Those materials meeting these criteria are described in abstract form using standard procedures. Information included in the abstract includes bibliographic data, evaluation results, a short narrative description of the material, and a set of terms describing the materials derived from the NIMIS Thesaurus. It is these latter terms that permit the recall of the abstract from the memory of the computer. To date we have written abstracts for about 7,000 educational materials. Four thousand of these abstracts describe commercially available materials.

The forms are sent to NIMIS where they are entered into the computerized information system along with abstracts of materials for other handicaps written by two additional Special Offices. These abstracts can then be recalled by entering the appropriate descriptors from the NIMIS Thesaurus. Not only will NIMIS offer direct access to educational materials information through computer terminals, but it will also publish a variety of materials information references.

An interesting innovation has been made in the new materials network. If a teacher uses NIMIS and identifies potential materials from reading the abstracts, she may not yet be sure the material is what she really needs. In many such cases, the teacher will be able to borrow the material for review and trial use from a fourth Special Office located at Indiana University in Bloomington.

NIMIS should be operational with the start of the school year in 1976. All of us should become familiar with procedures for its use and make maximum application of this tremendous new resource.

And now a few thoughts for the future. The future certainly is not clear. In this bicentennial year, when we look at the many problems that confront us in special education, we can't help but wonder where we will ever get the resources to attack them. The implementation of Public Law 94-142 is going to provide much help. Educational programming for individual children is going to create a greater demand for especially designed materials. Mainstreaming is going to increase the scatter of our children. This should increase the total demand for educational aids and magnify the demand for very small numbers of specific text titles. Certainly this scatter is going to make our research and development task more difficult.

During the next decade, I think we will continue to see the development of instructional packages based on the special needs of the visually handicapped. Under development at the Printing House are such diverse materials as a primary braille reading series complete with work materials and teacher manuals, a set of materials to provide basic sensory experiences to multi-handicapped children, and materials and tools to teach metrics. Outside the APH, materials under development include sets of individualized science experiments for elementary students, sets of materials for cognitive remediation, and orientation and mobility materials. There will be adequate coordination between APH and outside developers to maximize potential dissemination for newly developed materials.

It is through application of technology that the most striking advances will come. With respect to provision of braille, I expect that short-run production by braille presses will become economically feasible. Other means of storing and displaying braille reading materials may appear as is possible with the magnetic tape operated Argonne Braille Reading Machine. Application of optical character recognition can revolutionize braille printing and perhaps reduce costs. In any event, I think our old friend braille will maintain its important role in education of the blind.

Direct access to print will become a growing possibility through application of optical character recognition. Expressing print in spoken form as is projected for the Kurzweil Reading Machine will enable visually handicapped readers to attain reading speeds up to 300-400 words per minute.

Remote access to printed material is probable. A braille reader will be able to contact a library, arrange for a book to be optically sensed, reproduced in synthesized speech, and read to him over a phone or other communications system. In a like manner, a large type reader could have his material displayed on a TV screen or use the same spoken output.

Development of a variety of tools which will enable the severely handicapped to maintain more direct contact with their environment is probable.

In conclusion, the picture reveals that after a one-hundred-year preoccupation with tactile books, the field responded to the needs for a variety of educational aids and tools. Means and methods were found for the development of these in growing numbers. This growth shall continue into the future. In the future we can look to a significant impact from application of technology to access to the printed word. However, braille will still be with us.

COMPETENCY BASED CURRICULUM FOR TEACHERS OF THE VISUALLY HANDICAPPED: A NATIONAL STUDY

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About three years ago Miss Josephine Taylor suggested that with the movement in competency based education, educators of teachers of the visually handicapped should work together to determine the specialized competencies necessary to teach visually handicapped children over and above those to teach the sighted child. Between 1973 and 1975, the American Foundation for the Blind helped to coordinate approximately six meetings which included 30 professional teacher-educators of visually handicapped from 23 colleges and universities. At these meetings, the document, Competency Based Curriculum for Teachers of the Visually Handicapped, Field Testing Edition, was completed. It was further decided that in order to make this material more realistic in terms of teacher input, a national study should be designed to include reactions of teachers from both public and residential school settings.

In 1975, a questionnaire was designed to elicit reactions for competencies from teachers of the visually handicapped on a 5-point scale from strongly agree to strongly disagree. In addition, teachers were asked their actual roles and functions and the percentage of time spent in various school-related activities.

SAMPLE SELECTION

A description of the population or sampling frame was developed from the *One Hundred and Sixth Report of the American Printing House for the Blind, Inc.* for the year ending in June 1974. The report listed the number of visually handicapped students by residential school and state education program without information on numbers of teachers serving the students. Two lists were compiled. The first list showed number of students broken down by state program, a total of 16,640 students. The second list showed the number of students broken down by residential schools, a total of 6350 students in 45 residential schools. The sample selection plan was to distribute the 1,933 questionnaires to teachers by state and residential school in proportion to the size of the student populations.

DATA COLLECTION

Since there was no list of teachers and their addresses, the questionnaires were distributed in each state and each residential school by a central dispatcher - the state consultant or the residential school superintendent or principal. The individual questionnaire packets were complete with instructions and a return mailing envelope to AFB in New York.

The data collection process consisted of three steps. First, on October 15, 1975, a letter was sent to each state consultant and residential school superintendent outlining the procedure and requesting their cooperation. Second, the questionnaires were mailed to the dispatchers for distribution on November 1, 1975. A request for return by December 15, 1975, was enclosed with each questionnaire. Third, on January 3, 1976, a letter was sent to dispatchers asking them to encourage those not yet responding to complete and mail their questionnaires. Data collection was closed on the last day of February, 1976. At that time, there was a total of 807 valid responses. The data was transcribed to machine readable form, edited and corrected.

RESPONSE RATE

The response rate for the survey was 41.0% overall, based on 807 responses for 1,933 questionnaires. There are two factors that may have bearing on the response rate in the survey: 1.) There was no direct information about the population size and location of teachers, and the proportions were developed by inference using data on student populations; 2.) The distribution process was indirect, carried out through central dispatchers. Both factors led to considerable uncertainty about how many questionnaires actually reached the teachers.

The level of non-response experienced is not untypical of surveys for exploratory research. Since a broad assessment of competencies of this type had not been done before, and since the population of teachers of the visually handicapped is so diverse, the current survey must be reviewed as an exploratory effort. A higher response rate would have been preferred. However, the 807 responses contain valuable new information on competencies and teacher roles. The data has been analyzed in the spirit of exploratory research, searching for trends and associations that can suggest some structure for the relationships between competencies and teacher roles. It is not intended that this survey be the final word, but that it be one step toward understanding better the teaching requirements for the visually handicapped.

Discussion of Phase I

The project was divided into two phases. Phase I: To compare what teachers say they do to their reactions to competencies. Phase II: To do a factor analysis of roles of teachers (rather than titles) and then compare role and function to their reactions to competencies. Today, I will report on Phase I. During DVH at CEC next year in Atlanta, I will report on Phase II. In addition, all material regarding this project will be published by the American Foundation for the Blind.

Part IV of Questionnaire

Let's now look at some of the baseline information received from the 7 teacher programs for visually handicapped. Tables correspond to questions from the questionnaire answered by seven teacher groups: 1.) Special Class, 2.) Resource Room, 3.) Itinerant Program, 4.) Resource Room and Itinerant Program, 5.) Teacher Consultant, 6.) Residential School, and 7.) Other.

Part III

Time Spent After Normal School Hours

1. What is the approximate total number of hours spent per year on school activities after normal school hours? ____
2. Please indicate the approximate number of hours for each of the activities in which you are involved: HOURS
    - A. Professional growth experiences (additional course work, in-service training, etc.) ____
    - B. P.T.A. and other school-community groups ____
    - C. Educational organization meetings (board of education, professional organizations, etc.) ____
    - D. Parent counseling ____
    - E. Preparation of materials ____
    - F. Teacher consultations ____
    - G. Other (please list) ____

Part IV

Background Information

1. Type of Program: Please circle the item that gives the best description of your teaching program

   1 - Special Class
   2 - Resource Room
   3 - Itinerant Program
   4 - Resource Room and Itinerant Program
   5 - Teacher Consultant
   6 - Residential School
   7 - Other: Please describe ______________________________

2. Indicate the size of the community (communities) in which you work:

1 - Large metropolitan	(50,000 or more)
2 - Urban area	(2,500 to 49,999)
3 - Rural area	(less than 2,500)

3. Record the average number of miles traveled per month that are necessary in the performance of your duties (do not include travel time from home to work).: ______

4. Indicate the number and types of students that you serve by answering the following:

   Total number of visually handicapped students (visually handicapped students either have no vision or have visual limitations after correction that result in educational handicaps unless special provisions are made): ______

   A. Of the total number of visually handicapped students, how many have multiple handicaps (A child who, in addition to a visual impairment, has at least one other disability is classified as multiply handicapped. This classification is applied without regard to the extent of either disability.)? ______

   B. Of the total number of visually handicapped students, how many are legally blind (20/200 or less in the better corrected eye or a central visual acuity of more than 20/200 if there is a field defect in which the peripheral field has contracted to such an extent that the widest diameter of visual field subtends an angular distance no greater than 20 degrees)? ______

   C. Of the total number of legally blind students, how many are multiply handicapped? ______

   D. Of the total number of visually handicapped students, how many are partially sighted (better than 20/200 in the best corrected eye)? ______

   E. Of the total number of partially sighted students, how many are multiply handicapped? ______

   F. Of the total number of visually handicapped students, how many are totally blind (i.e., non-visual learners)? ______

   G. Of the total number of totally blind students, how many are multiply handicapped? ______

5. Record the number of visually handicapped students served by grade level:

Pre-school .. .. ______
Elementary (Grades K to 6) .. .. ______
Junior High (Grades 7 and 8) .. .. ______
Secondary (Grades 9 to 12).. .. .. ______
Upgraded .. .. ______

6. Indicate the highest level of teacher training you have had in the area of visually handicapped:

1 ______ no formal special training
2 ______ some isolated course work (____ number of hours)
3 ______ Bachelor's program in education of the visually handicapped
4 ______ Master's program in education of the visually handicapped
5 ______ Post-Master's work in education of the visually handicapped

7. Indicate other areas of related training. Circle as many as appropriate:

1 Learning Disabilities
2 Emotionally Disturbed
3 Mental Retardation
4 Guidance and Counseling
5 Deaf/Blind
6 Orientation and Mobility
7 Other: Please list ______________________________

8. A. Indicate number of years in teaching including the current year:

Part-time ______ Full-time ______

B. Indicate number of years teaching visually handicapped including the current year:

Part-time ______ Full-time ______

9. What is the length of your regularly scheduled work time? Circle:

10 months 11 months 12 months

10. What is your official title? ______________________________

TABLE 1
COMPETENCY BASED EDUCATION FOR TEACHERS OF THE VISUALLY HANDICAPPED

PART IV OF QUESTIONNAIRE

	TYPE PROGRAM	1	2	3	4	5	6	7	TOTAL
3	Miles Traveled per Month	678.232	315.763	669.169	364.627	947.857	259.115	988.753	548.6514
4	Total Number of Students	15.556	10.073	16.437	15.745	35.714	30.462	41.684	23.1280
4A	Multiply Handicapped	8.074	3.109	5.722	5.020	11.476	13.882	22.297	9.8698
4B	Legally Blind	9.434	5.222	8.511	9.255	18.333	24.355	27.160	15.2124
4C	Legally Blind Multiply Handicapped	5.660	1.655	3.284	3.471	5.333	11.690	16.959	7.2558
4D	Partially Sighted	5.585	3.759	7.884	6.431	17.429	8.267	14.987	8.4222
4E	Partially Sight Multiply Handicapped	4.167	1.455	2.332	1.647	5.952	2.657	5.811	2.8999
4F	Totally Blind	2.849	1.218	1.730	2.373	4.714	11.326	14.880	6.0393
4G	Totally Blind Multiply Handicapped	1.904	0.273	0.772	1.255	2.476	5.564	9.120	3.1339
5A	Numbers in Grade Level Preschool	5.980	0.259	0.780	0.412	2.714	0.856	6.480	1.7577
5B	Elementary	9.058	7.019	6.814	5.941	13.143	8.779	14.351	8.4458
5C	Junior High	1.423	3.209	2.264	2.216	5.429	4.502	6.027	3.3825

5D	Secondary	1.423	1.611	3.250	3.333	6.714	12.632	7.653	6.2150
5E	Ungraded	4.288	0.352	2.883	2.824	5.857	7.069	10.880	4.8932
8A	Years in Teaching Part Time	0.309	0.745	0.587	0.275	1.143	0.436	0.580	0.5270
8A	Full Time	8.148	8.236	8.191	7.220	6.619	12.673	11.025	9.7291
8B	Years in Teaching the Visually Handicapped Part Time	0.148	0.145	0.404	0.196	0.850	0.204	0.175	0.2802
8B	Full Time	5.636	6.370	6.102	6.294	5.476	10.164	8.275	7.5293
	Hours in Training	2.093	2.389	2.739	0.720	1.9	4.795	1.416	2.9796

Type Program

1 - Special Class
2 - Resource Room
3 - Itinerant Program
4 - Resource Room
& Itinerant Program
5 - Teacher Consultant
6 - Residential School
7 - Other

TABLE 2
PART IV: QUESTION 2, SIZE OF COMMUNITY

COM SIZE	Metro	Urban	Rural	Total
TYPE PROG 1	39	10	2	51
2	35	19	0	54
3	134	104	24	262
4	31	16	2	49
5	9	6	6	21
6	127	87	4	218
7	61	14	4	79
Total	436	256	42	734

Type Program

1 - Special Class
2 - Resource Room
3 - Itinerant Program
4 - Resource Room & Itinerant Program
5 - Teacher Consultant
6 - Residential School
7 - Other

TABLE 3
PART IV: QUESTION 6, HIGHEST LEVEL OF TRAINING

Frequency Count

TYPE PROG	1	2	3	4	5	6	7	Total
TRAINING								
1	2	3	5	1	0	18	3	32
2	8	8	44	4	3	77	11	155
3	23	19	81	18	7	23	17	188
4	18	18	100	20	9	63	23	251
5	3	5	37	8	2	40	21	116
Total	54	53	267	51	21	221	75	742

Column Percentages

TYPE PROG	1	2	3	4	5	6	7	Total
TRAINING								
1	3.7%	5.7%	1.9%	2.0%	0.0%	8.1%	4.0%	4.3
2	14.8	15.1	16.5	7.8	14.3	34.8	14.7	20.9
3	42.6	35.8	30.3	35.3	33.3	10.4	22.7	25.3
4	33.3	34.	37.5	39.2	42.9	28.5	30.7	33.9
5	5.6	94	13.9	15.7	9.5	18.1	28.0	15.6

Training

1 - No Formal Special Training
2 - Some Isolated Course Work
3 - Bachelor's Program in Ed. of the V.H.
4 - Master's Degree in Ed. of the V.H.
5 - Post-Master's Degree in V.H.

Type Program

1 - Special Class
2 - Resource Room
3 - Itinerant Program
4 - Resource Room & Itinerant Room
5 - Teacher Consultant
6 - Residential School
7 - Other

Part II of Questionnaire: Percentage of Time Spent

Percentage of time spent in various activities is an important factor when looking at teacher role. Although I have each teacher response grouped by teacher program, due to restraints in time we will look only at the total group of 807 teachers. In rank order the top three areas of 1.) Instructional Strategies, 2.) Assessment and Evaluation, and 3.) Guidance and Counseling, are common across all program groups. In fact, looking ahead to Phase II, it is basically Administration and Supervision and School-Community Relations that are the best discriminators in the factor analysis of actual teacher role and job function. It is interesting to note that the data received supports Jones Study of the early 60s which states that Teacher Consultants spend less than 50% in Instructional Strategies as opposed to Itinerant Teachers who spend more than 50% in Instructional Strategies. This study shows 34% of time for Teacher Consultants and 52% for Itinerant Teachers was spent.in Instructional Strategies.

The following chart shows the total group of teachers response to teacher-related activities which were divided into seven groups: Assessment & Evaluation, Educational & Instructional Strategies, Guidance & Counseling, Administration & Supervision, Media & Technology, School-Community Relations, and Research.

Part I of Questionnaire

Competencies in Part I of the questionnaire were looked at by total teacher respondents as well as by responses compared to Teacher Training, Community Size and Student Population served.

The competencies were grouped into seven areas: Assessment & Evaluation, Guidance & Counseling, Administration & Supervision, Media & Technology, School-Community Relations, and Research.

Today, I will review briefly some of the findings and limit the discussion to reactions to competencies by the total teacher population (807).

Reactions of 807 Teachers to Competencies Developed by Teacher Educators

Assessment and Evaluation. Generally, all teachers strongly agreed with competencies falling within this area, but they were

TABLE 4
WITH WHOM DO YOU WORK

Teaching Activities	%	Desk Work	With Students	With Classroom Teachers	With Other Specialists	With Parents	With Other
Assessment & Evaluation	18.1685	2.7689	11.5225	1.8298	1.2809	0.8151	0.1641
Educational & Instructional Strategies	52.8757	8.0448	37.6227	5.1671	1.5308	1.0615	0.2741
Guidance & Counseling	11.2064	0.3706	6.1060	2.0266	0.9219	2.4909	0.4491
Administration & Supervision	4.9213	1.3483	0.6206	1.3953	0.8324	0.1802	0.6299
Media & Technology	5.4149	1.2960	3.0946	0.4972	0.6282	0.2873	0.2246
School-Community Relations	4.3582	0.3130	0.3588	0.7585	1.2181	1.3225	1.4320
Research	1.9958	1.2394	0.3254	0.1449	0.3657	0.0323	0.1083

more inclined to agree with a need to know about a typical development, rather than actual assessment procedures, using a variety of informal and formal tools.

Educational and Instructional Strategies. All teachers strongly agree with the need to know about specific curricula areas such as: Activities of Daily Living, Orientation and Mobility, Low Vision, Concept Development, etc. However, the majority of teachers felt that there was less need to know about prevocational information, auditory and linguistic processes, sequence of development of intact learning, field trips, attitudes of sighted toward the blind, and the need to communicate about working with visually handicapped youngsters to parents and significant others.

Guidance and Counseling. All teachers strongly agreed that there is a need to know about the development of self-concepts for the visually handicapped learner, and the effects of the visually handicapped learner on the family. However, the majority of teachers did not agree as strongly with the need to know about techniques of interviewing, and the knowledge of transmitting information and guidance and counseling to other school personnel. In this area, however, some of the competencies may have not been clearly stated, so the reactions from teachers may be somewhat ambiguous.

Administration and Supervision. The majority of teachers strongly agreed, with the exception of residential schools, to a need to know and understand the effects of mainstreaming on the visually handicapped learner, as well as the effect of mainstreaming on the regular classroom teacher. With the exception of the teacher consultants, teachers did not agree with a need to know about fiscal management, care of instructional media, or paraprofessionals. In addition, under this category, there was considerable disagreement with the need to know about program evaluation, writing of behavioral objectives, accrediting agencies, and the transmission of evaluation criteria to other school personnel.

Media and Technology. The vast majority of teachers strongly agreed that there is a need to know braille codes, print reading problems, and acquisition of educational devices. The majority of teachers did not feel as strongly regarding the need to know about format transcription in braille, problems in braille transcription and technical aids for production.

School-Community Relations. The vast majority of teachers, with the exception of teacher consultants, did not strongly agree with the need to know about public policies affecting the visually handicapped, community resources and volunteers, knowledge of accepted values of society towards the handicapped, philosophy regarding education of the visually handicapped, professional organizations, public policy, and advocacy. The vast majority of teachers reporting did express a need to know their own professional strengths, and their relationship to school personnel.

Research. This, above all previous categories, was most strongly disagreed with by all teacher groups.

CONCLUSION

Teachers seem more enthusiastic about those competencies which deal directly with the visually handicapped student. The more distance from the child, that is, distance perceived by teachers for the visually handicapped, such as in school-community relations, research, etc., the less enthusiastic is teacher response.

It will be interesting to see what Phase II brings to light in this project, and the results of these findings not only in terms of revising competencies, but perhaps re-looking at teacher preparation programs, in terms of course content, and emphasis of preparation regarding future teacher role and job function.

In conclusion, I sincerely thank all the teacher educators, superintendents and principals of residential schools for the blind, state vision consultants, and most of all, the 807 teachers who responded, making this study possible.

MANDATION AND THE VISUALLY IMPAIRED CHILD IN KANSAS

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Introduction

Kansas is following the national trend of a deep commitment to programming for exceptional children within the structure of the local public school system. We began in 1969 with a partial mandate to provide services for the mentally retarded, the cerebral palsied, and epileptic children, and later the learning disabled child. This mandate was to be fully implemented by 1974.

In 1974, laws were passed making mandatory programming for all exceptional children; this mandate is to be fully implemented by 1979. The full responsibility for the education of a child will rest with the home school district of the child. K.S.A. 72-966 requires that by July, 1979, "the board of education of every school district shall provide special education services for all exceptional children in the school district."

Our office, the Special Education Office of the State Department of Education, recently completed the writing of the State Plan for Special Education, which will provide for the implementation of the mandate and also serve as a guideline for local school districts and institutions in planning to program for all exceptional children by 1979.

State Plan for Special Education

The Kansas State Plan for Special Education was adopted by the State Board of Education in the spring of 1976. Rather than extract certain portions of the State Plan to have legislative sanction and to serve as the rules and regulations, two rules and regulations were written and adopted. The first stipulates mandated school age of exceptional children as the age at which the local board of education provides educational services for nonexceptional children. Services for pre-school children are authorized and encouraged, and are eligible for reimbursement, but are not mandated. The upper limit of school age for exceptional children is 21, or until the student has completed the local curriculum, whichever event shall occur first.

The second regulation states that the entire State Plan for Special Education will serve as the rules and regulations, thereby giving the force and effect of state law to every statement in the State Plan. Needless to say, this was quite a pleasant surprise for those concerned with exceptional children.

In drafting the section of the State Plan relating to programs for the visually impaired, input was sought and received from many sources. The special input and critique sessions included representation from the following groups: Local directors of Special Education, the State School for the Visually Handicapped, parents of visually impaired children, day programs for the visually impaired, organizations in the state which have concerns for and provide services to visually impaired children, Social and Rehabilitation Services, and teacher preparation centers.

Of course, certain federal guidelines and requirements had to be complied with. Much emphasis was given to the concepts of normalization, deinstitutionalization, and least restrictive alternatives. When considering geographical location, appropriate and high quality services and educational programs shall be provided as close to the child's home as possible. The child shall be evaluated, an individual plan developed, and to the extent possible, an educational program provided within the child's own home school district. When that is not possible, placement efforts shall be made within a multi-district regional area (Special Education Cooperative), and only when this is not possible shall the services and programs of a residential setting be utilized. Certainly, throughout the entire process, parent wishes will be sought and will be considered thoroughly.

Following the normalization principle, the rights of the child shall be recognized, and services provided for him will be related to his need and will utilize a means that is as culturally normal as possible to reach goals as normally as possible.

Definition

For educational purposes in our state, visually impaired children and youth are identified as those whose limited vision interferes with their educational and/or developmental progress. All blind and visually impaired children ages 0 to 21 are reported as soon as identified to the State Department of Education, and to the appropriate regional evaluation team for the visually and hearing impaired. The Special Education Section maintains a central file of information concerning all blind and visually impaired children. The State Plan specifies that the State Department of Education is responsible for all special education programming for visually impaired children, elimination of unnecessary duplication, use of professionally developed program standards, and maximum educational efforts at the earliest possible age.

It appears that as a natural result of our Special Education mandate, many new programs in public school settings will be initiated for the education of the visually impaired, and that many existing programs will expand to accommodate more children and to provide more services. It is hoped that at each stage of planning for a child's education, efforts will be made to educate that child according to his individual needs and abilities. There is also a need to recognize that changing needs of an individual child may require that he move from one type of program to another. Within our agency structures, much flexibility must be developed to provide for this.

Educational Placements

We see as primary educational placements the following:

1. Full public school placement or integration without support;
2. Integration into public school program with minimal support from an itinerant teacher of the visually impaired;
3. Public school placement in a self-contained or resource classroom for the visually impaired;
4. Placement in a residential setting such as the State School for the Visually Handicapped or another appropriate residential agency; and
5. Placement at the State School for the Visually Handicapped with access to the public school program near that facility.

Every visually impaired child requiring program placement or a change in program placement is reviewed and/or evaluated by a regional evaluation team for the visually impaired, or a local district team which can provide a comprehensive evaluation. Whenever possible, all phases of the placement procedures are implemented within the child's home school district. Optimally, appropriate and high quality educational services will be available at this level. This approach is based on the philosophy of normalization and delivering service in the least restrictive environment which is appropriate to the child's educational needs.

Regional Team Concept

When a school district/institution has professional personnel qualified to provide a comprehensive evaluation and to make educational recommendations for vision or hearing impaired children, it may establish a Local Evaluation Team to provide these services. All Local Evaluation Teams must be approved by the State Special Education Section. To serve those districts which do not employ personnel qualified to evaluate and program for children with sensory handicaps, Regional Evaluation Teams are established and trained by the State Special Education Section. These Teams consist of district-level personnel and are sponsored by a local education agency.

Situations in which a vision or hearing impaired student requires regional or local team consideration include the following:

1. The child has not previously received educational services and is being considered for inclusion in a formal education program.

2. The child has an educational program, but is experiencing learning problems.

3. The child seems to need an adjustment in his educational program.

4. The child needs early intervention (pre-school) for optimal personal development.

5. Annual re-evaluation for each child, required to determine current needs.

Regional Team Membership

Each Regional or Local Evaluation Team for the Visually Impaired and Hearing Impaired has a membership consisting of:

1. A fully approved school psychologist;
2. An approved school social worker or a qualified social worker from another agency;
3. An approved local director of special education or a designated appointee of the chief administrator of the district/institution;
4. An approved teacher in the area of vision or hearing, depending upon the problem of the child under consultation; and
5. Professional persons from the child's school district who are well acquainted with the child and his school situation to include, but not limited to, the child's teacher and the local administrator responsible for handling referrals to the Team.

The special education administrator is responsible for the overall coordination of the evaluation process. The school psychologist acts as chairperson of the Evaluation Team. The chairperson has the power:

1. To invite any public or private agencies having data regarding a particular case to present the agency data to the regional team; and
2. To appoint other team members with background knowledge and expertise related to the child being studied and staffed, i.e., school nurse, eye specialist, otologist, school principal, guidance counselor, speech and hearing clinician, rehabilitation specialist, vocational counselor, classroom teacher, audiologist, and ophthalmologist.

The duties of Regional/Local Evaluation Teams for the Visually Impaired and Hearing Impaired are:

1. To receive and review referrals in compliance with the screening and evaluation procedures specified in this State Plan;

2. To gather existing information pertinent to the case under consideration;

3. To obtain any additional needed information, such as current medical, educational, social and/or psychological evaluations;

4. To call meetings for the staffing of cases; and

5. To prepare a written report which states the results of the comprehensive evaluation and makes appropriate educational recommendations. The educational recommendation deemed optimal by the Evaluation Team may not be feasible because of local capabilities or parental feelings. Therefore, the Evaluation Team shall state alternative recommendations which will meet the needs of the child being considered.

Copies of the team's report are filed with:

a. The Local or Regional Evaluation Team;

b. The State Coordinator of Regional Teams, State Department of Education, for inclusion in a central file;

c. The school district in which the child resides. The school district may request a conference regarding team recommendations.

Referrals to the regional teams must be made by the special education administrator (or his designee) from the district requesting the evaluation. If a school district does not employ a special education administrator, referrals must be signed by the superintendent of schools (or his designee). Parents or other interested persons wishing to obtain team services for a vision or hearing impaired child may contact the administrative offices of the district in which the child resides. Any referrals made directly to the State Department of Education are sent to the district in which the child resides for signature and forwarding to the coordinator of the closest regional team.

If it becomes apparent that there is a need for more extensive diagnostic work-up than is possible within the structure of the Regional Evaluation Team, the Team shall have the authority, with parental consent, to refer the case to an outside agency for further evaluation.

Regional Team In-Service

During the first full year of activity, the sixteen Regional Evaluation Teams in Kansas processed 130 individual cases, and participated in three in-service training sessions which provided an orientation to the "team concept," training in educational, psychological and social assessment, and provided a "practicum" situation to allow the team psychologists to participate in the evaluation of multi-handicapped children. It is anticipated that further in-service activities will be a joint effort among the universities, colleges, State Department of Education, and local school districts through Title VI-D and Title VI-B monies.

The State Team Advisory Service acts as an advisory body which may:

1. Plan extensive training for the regional teams (e.g., appropriate testing tools, formulation of recommendations, referral sources, and educational resources in Kansas);

2. Provide consultative services to the regional teams as requested;

3. Plan continued in-service training for the regional teams; and

4. Aid in the establishment and training of new regional teams.

State School

The role of the State School has been clarified in the State Plan. The administrative structure and operation of the Kansas State School for the Visually Handicapped is subject to direct approval by the State Board of Education. The educational program of the State School is to be monitored and supervised by the Special Education Section of the State Department of Education, including program approval, curriculum, and certification of the teaching staff. The new role for the State School for the Visually Handicapped, as outlined in the State Plan for Special Education, states that the program emphasis will be to specialize in providing services for visually impaired children in the following circumstances:

1. Those children who are visually impaired and live in an area where there are no special educational services available;

2. Those children who are visually impaired and live in an area where there are services, but live in a home setting that fails to meet the needs of the child; and

3. Those children who are visually impaired and have accompanying compounding handicapping conditions to the extent that they cannot adequately function in a public school program but are functioning at a level higher than is required to be accommodated in residential agencies for the retarded.

Additionally, the State School will provide services to parents and professionals as follows:

1. Provide staff development for individuals working in the area of the visually impaired;

2. Provide special parent/child training sessions;

3. Provide post-secondary training for older members of the visually impaired population when not possible in the local areas or through Social and Rehabilitation Services; and

4. Provide short-term special training sessions for students when needed and not available locally.

Both visually impaired and the multi-handicapped visually impaired learners, between the ages of 5 and 21, may be admitted to the State School. All requests for admission to the State School shall first be referred by the school district to a local or regional team for the visually handicapped and hearing impaired. Each regional team has the power to include representation from the State School in the staffing when that school might be an alternative placement for a particular child.

Resource Center

Our state is quite proud of our state-wide resource center for the visually impaired in Wichita. The resource center was established in 1969 and has been supported with Title VI-B funds, state categorical aid, and local funds. This agency serves as the state's center for the storage, processing, and distribution of special materials and equipment for the visually impaired students in the state.

The services requested and the circulation of materials have steadily increased to over 5,500 per year since the establishment of the resource center. Increased numbers of visually impaired children identified as needing services, coupled with the establishment of additional special education programs for the visually impaired, have brought additional increased demands to the resource center. Because of the changing state and federal priorities of Title VI-B funds, full state funding for the service center is being sought for FY 1978. It is hoped that the services provided by this center can be broadened eventually to include such components as mobility instruction for day programs. In time, we also plan to computerize the operation of this center for the inventorying and coordination of materials. This will also include the holdings of the State School.

The number of public school programs for the visually impaired in the state of Kansas presently numbers 16. According to plans submitted by the LEA's, the number of programs at the local level will double within two years, increasing the number to 32 by the fall of 1977. Problems presenting themselves as we strive to meet the special education mandate by 1979 include:

1. How to program effectively for large sparsely populated rural areas, or where very minimal numbers of visually impaired children have been identified;

2. The out-of-state recruitment of trained teachers of the visually impaired, since a training program does not exist in Kansas; and

3. The development of a meaningful interaction among the local school districts, the State School for the Visually Handicapped, and other state institutions where visually impaired children reside.

Effects of Mandation

According to reports for the school year just ended, the following important information and trends are indicative of some of the effects of mandation within our state:

1. In the day programs, a surprising fifteen percent of the children served were of pre-school age, even though preschool programming is not mandated.

2. In the day programs, only eleven percent of the students use braille as the primary learning medium. Ten percent were reported as being primarily aural learners and the remaining were users of regular print, large print, or a combination of the two.

3. In general, the enrollment at the State School has been on the decline. During the past nine years, the enrollment has declined by fifty-four percent. Fifty-one percent of the students at the State School utilize braille as the primary learning medium. An estimated seventy-two to seventy-five percent of the enrollees could be classed as multi-handicapped. Our State School is clearly following the national trend of serving a population that is more severely visually limited and that exhibits multi-handicapping conditions.

This appears to be a very stimulating, exciting, and challenging time for those of us in Kansas charged with the responsibility of providing educational programs for a very special group of special children -- those who are visually impaired.

Reference

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MANDATORY LEGISLATION: STATE OF THE ART

D. Gary Coker

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When our chairperson, Dr. Nancy Bryant, requested that I participate on this panel, she indicated that our topic would be "Are schools for the blind another endangered species: A discussion of the effects of mandatory legislation on programs for the visually impaired." She further indicated that I should address myself to the effects within the large geographical area of which I am a part, the south central and southeastern portion of the United States. Having known me for some years, Nancy reminded me that the intent of my participation was not to portray a biased view but to present an overview of the situation.

Geographically speaking, I contacted 12 states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, and Virginia. The chief administrators of the residential and public schools were contacted to ascertain the state of the art as it pertained to mandatory education and/or mainstreaming of visually handicapped children. The result of this inquiry produced copies of the various state laws and many interesting comments.

Most of the current laws were enacted since 1972; therefore, a review of the placement of children since that time would appear appropriate. In the states mentioned, in 1972 there were 2633 children enrolled in residential programs, and 2991 in public school programs, or 47% enrolled in residential, and 53% in day schools. During the same year the national percentages were 35% in residential schools and 65% in day schools. In 1975 the same states reported 2854 students enrolled in the residential schools, and 4057 students in the day school programs, or 41% enrolled in residential, and 59% in day schools. In 1975, national statistics indicated that 31% were enrolled in residential schools and 69% in day schools.

Five states indicate that the effects of mainstreaming are yet to be seen; Alabama, Arkansas, Louisiana, Mississippi, and North Carolina continue to have the vast majority of visually handicapped children in residential schools.

Most of the state laws within this region indicated that children should be educated in the "least restrictive alternative." The residential schools are usually ranked rather low in a series of alternatives. In some of the states the residential school is a parental option.

What is the "State of the Art?" Recently, an administrator of a large city school system said that "Current thought dictates a retention of exceptional children in the regular grades." A look at the previous statistics indicates a drastic shift in where children are receiving education. It is my contention that mainstreaming, or integration, and special schooling is more than a legal decision. I have a legal right to walk down Main Street of any town in the United States. But can my needs be met there? A child has a legal right to be educated in the regular classroom, but can his needs be met there? Where is the evidence that public school programs are superior to residential schools?

What are we to do? We must base our entire process upon needs as they relate to quality education. We cannot expect untrained teachers to adequately meet unique educational needs without specialized training, especially when that same teacher must meet the needs of 25 other children who deserve attention and different types of teaching material. If we are to have integration of the handicapped child we must look to our universities to train all future teachers with the non-categorical approach. However, let's not abandon the need for strong special education, teachers who must understand vision and its implications to reading, writing, mobility, and social adjustment. The college that substitutes categories with generalizations rather than technical education fails to understand the needs of exceptional children.

Our residential schools are going to have to base programs on needs. They do not need to model the regular classroom. Skills must be clearly defined. Assessment and up-to-date information by all teachers will have to be maintained. Residential schools will have to receive children only after adequate screening and programs to meet their needs have been established. The school has a responsibility to refer children to the day schools if their needs can be met best in that placement.

All schools must include training for life. A realistic vocational program and preparation for independence in society are musts.

We recognize the needs of the residential school; what about day schools? There are plenty of examples of good integrative experiences of blind children both at the elementary and secondary levels. However, the present course of action must see: 1.) Improved quality of teachers; 2.) A greater individual approach with refined diagnostic and assessment procedure; 3.) A reduction of class sizes; 4.) An absolute commitment that integration must provide the blind child an education which will bring him to his maximum potential and equip him with experiences and skills for appropriate employment.

Those of us in residential schools must be accountable for some of the existing problems. If special education had been firm in its acceptance of children and established a position that *every* child had the right to an education, much of the existing controversy would not be present.

Recently I had a dream, or more appropriately, a nightmare. The year was 1990 and all the visually handicapped graduates were meeting in a large auditorium. They were seated and were quoting Shakespeare and expounding other verbal knowledge. Some were saying how tall the Alps were, while others talked of the many lakes in Michigan. However, in my dream I could not help noticing that most of the students were a little overweight. Upon inquiry I was told they were exempt from physical education because of their blindness. I also found that they were all anxiously awaiting classes in job experience, home economics, vocational training; and then suddenly all of these students rose to their feet as sighted guides guided them outside to their transportation to take them to one of the regional centers for habilitation. Twelve years of school -- a high school diploma -- and then to be confronted with being habilitated?

CENTERS AND SERVICES FOR DEAF-BLIND CHILDREN: PAST, PRESENT, AND FUTURE

Robert Dantona

Centers and Services for Deaf-Blind Children
Washington, D.C.

It took the devastating and catastrophic force of the rubella epidemic which swept across the United States in 1964-65, to bring this Nation's attention to its long neglect and indifference toward deaf-blind and other severely handicapped children. As a result of this epidemic, an estimated 30,000 children were born with one or more handicaps, including visual impairments, hearing impairments, mental retardation, and a variety of other physical disabilities.

With knowledge that the epidemic would result in a significant increase of deaf-blind children, an estimated 2500 such children, and largely due to the persistent urging of a handful of educators, Congress responded to the educational needs of this most severely handicapped population by approving Public Law 90-247, Part C, which amended Title VI of the Elementary and Secondary Education Act to develop model centers for deaf-blind children. President Johnson signed this Law on January 2, 1968, and a million dollars was allocated in fiscal year 1969 to establish centers and services for deaf-blind children. On April 13, 1970, this Law was amended by Public Law 91-230, Part C, Section 622, Title VI of the Education of the Handicapped Act.

The Bureau has administered the program since its inception in 1969, and has established nine multi-state Regional Centers for Deaf-Blind Children and one single state center, a total of 10 centers to cover all 50 states and territories.

The Regional Deaf-Blind Center Concept

The regional deaf-blind center is not to be thought of as a monolithic structure which would serve all deaf-blind children; rather, it is an administrative and organizational unit developed for the purposes of identifying, utilizing, and coordinating every available resource to provide the needed services for all deaf-blind children.

The deaf-blind child is defined as a child who has "...auditory and visual handicaps, the combination of which causes such severe communication and other developmental and educational problems that they cannot properly be accommodated in special education programs solely for the hearing handicapped child or for the visually handicapped child."

Because of the breadth of services needed by deaf-blind children of all ages, and the widespread geographic distribution of these children, it was essential that public and private agencies from every state join in a cooperative effort under the regional center concept.

Each regional center has a coordinating staff responsible for administering the center program under contract agreements to assure that all deaf-blind children are provided through the participating agencies the following: 1.) Comprehensive diagnostic and evaluative services; 2.) Programs for the adjustment, orientation, and education of deaf-blind children; integrating all necessary professional and allied services; and 3.) Effective consultative services for parents, teachers, and others who play direct roles in the lives of these children.

The deaf-blind centers also plan and provide the following in order to identify and meet the full range of special needs of this population and their parents: 1.) Research; 2.) Development or demonstration of new educational programs; 3.) Inservice training for parents, professionals, and allied personnel; and 4.) Dissemination of materials and information about practices found effective in work with deaf-blind children.

Extent of the Problem

Since 1969, the ten regional deaf-blind centers have identified 5996 children, an increase of more than 900 children since April of 1975. It is estimated that the population may reach as high as 7000 as more and more deaf-blind children are located in state institutions for the retarded. It should be realized that rubella is not alone as the chief factor contributing to the increase of deaf-blind children since the mid 1960s; other communicable diseases such as encephalitis and meningitis have contributed to this increase, as well as the improper use of drugs during pregnancy, irradiation, and genetic anomalies.

Services Provided by the Regional Deaf-Blind Centers

The ten regional centers, providing leadership and technical assistance to the states, with increasing federal funds from 1 million dollars in Fiscal Year 1969 to 16 million in Fiscal Year 1976, combined with as much or more money from state and local agencies, will implement the following services in school year 1976-77:

1. Some 3983 deaf-blind children will be enrolled in *full-time educational programs* funded in part, or totally, by federal funds. Of this number, some 500 will receive program emphasis in prevoc/vocational services.

2. Some 602 deaf-blind children will be enrolled in *part-time educational programs* which provide at least 30 hours of services per year (such as itinerant home services).

3. Some 1905 children will receive *summer services* which provide full-time educational services for at least 6 weeks of the summer months and allow for an extended school year program for those children who can benefit from it the most.

4. Some 312 children will receive *educational services* offered in a *home environment* for at least 30 hours per year. These services are made available only to children not enrolled in full or part-time educational programs. A *home correspondence course* developed especially for parents of preschool deaf-blind children will also be made available to nearly 200 parents.

5. *Initial medical diagnosis and educational evaluation* will be provided to 551 children; and, periodic reassessments will be provided to about 2328 children to review their progress for the purpose of revising their educational programs.

6. *Family counseling* services will be provided to 2457 families or parent surrogates of deaf-blind children. These services will provide parents or guardians with a clinical/educational assessment of the progress of their child; opportunity to provide input into the development of the curriculum for their child; and training in the methods, techniques, and practices most likely to provide positive stimulus in the home environment to assist the child's progress.

7. *Short-term* teacher training of one week's duration will be provided to some 551 teachers; and long-term training of two week's duration to some 212 teachers. *Short-term* training for one week will be provided to 713 aides and *initial aide training* for one month to some 117 aides before employment.

All of these services will be provided through some 300 programs and activities coordinated and funded under subcontract agreements between the ten regional centers and their respective state and local education agencies, state departments of mental hygiene, and private non-profit agencies. Such a wide range of programs and activities, which include all 50 states and the territories, make possible a full continuum of services for deaf-blind children, their parents, teachers, and others who work in some way with these children.

The ten regional centers are also responsible for providing in 1976-77 certain basic supportive services to the states within their regions. These include:

1. The establishment and operation of a *casefinding and referral system* for locating deaf-blind children. A registry is maintained by each center, and minimal data is gathered to assist in determining a child's eligibility for services under this program and for developing a comprehensive long-term program of special educational assistance for each child.

2. The establishment and operation of a program to assist in the development of *individual instructional* or *prescribed educational plans* for each deaf-blind child enrolled in programs under this effort. Such child-based plans will be invaluable in each center's effort to plan for the delivery and coordination of appropriate services over the child's lifetime.

3. The establishment and operation of a *program for assisting state education agencies,* and other responsible state agencies concerned with the education, rehabilitation, and health of deaf-blind children, *in the development of appropriate state plans* which will assure the provision of meaningful, relevant and continuous services throughout the lifetime of the deaf-blind person.

4. Each center will *collect, maintain and disseminate materials* and information on practices found effective in working with deaf-blind children and their families.

Future Directions

Nearly 12 years have elapsed since the rubella epidemic and we are now able to measure some of the consequences and evaluate how the regional center concept has worked over the past seven years in response to the demands placed upon it. The crisis was not the epidemic, for, as we have learned since that time, more than half of our population of 5996 deaf-blind children are victims of other causes. The crisis was the delay in providing timely services, the failure to react quickly enough to the critical needs of this severely handicapped population.

The Regional Centers for Deaf-Blind Children and the states have worked together for a joint resolution of this crisis since 1969. Their cooperative efforts have provided educational services to 81 percent of the 5996 known deaf-blind children, and educational programs are now to be found in every state, including the Trust Territories. As states continue to develop their own resources and as Title VI-B funds under Public Law 94-142 (which amends the Education of the Handicapped Act) assume a share of the costs for educational services for the deaf-blind child, the deaf-blind program with Title VI-C funds will focus on other unmet program needs for this maturing population.

Increased emphasis by the centers will be placed on the development of prevocational and vocational programs which will assure a meaningful transition for deaf-blind children from educational programs to rehabilitation services. Also, increased community based programs such as satellite homes, foster home services, and community residence programs will be developed cooperatively with the states in an effort to facilitate the deinstitutionalization process. Basic and applied research will assist in long-range educational planning, and demonstration models will assist in validating assessment techniques and educational methodologies. Increased technical assistance programs by the centers with expertise in administration and education will be developed to assist the states and participating agencies in planning, staff training, curriculum development, child assessment, child find, and program evaluation.

To meet these new efforts, a new state-federal partnership will be developed by mid-1978, drawing upon state and federal resources to achieve a common goal which will be realized by 1980: To provide a full continuum of services which will assure, not only equal educational opportunity for all deaf-blind persons, but also their right for a full and meaningful life in society.

ACCOUNTABILITY AND THE PARAPROFESSIONAL

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Within the past ten years there has been a significant escalation in the use of the terms "accountability" and "paraprofessional." Indeed, one can hardly converse with an educator without some mention of them. What are some of the reasons for this phenomenon? On the obvious side, people want to know for what they are paying. National Mandatory Special Education has either been instituted or is becoming imminent in most states. The cost for these programs cannot be described as penny ante. Since taxpayers, legislators, federal funding agencies, and others are not interested in highly-paid baby-sitting, they not only want to see services performed, they want to see results. In many cases, funding for regular education is meeting opposition in the form of local millage defeats while more and more money (also the taxpayer's, but not voted upon locally) is being spent on the education of handicapped children. State legislators who backed the special education acts in the various states are being asked why normal children are being educated under less than optimal conditions while handicapped children are being highly subsidized (the right to education being some vague concept which everybody agrees with, theoretically). Personally, I feel that it is our (administrators') responsibility to provide legislators and other interested individuals with data to support the legislative action taken in order to provide us with a firm basis for continued funding.

Paraprofessionals are an increasing segment of the personnel employed to deliver services to large numbers of handicapped children. Previous to the enactment of Mandatory Special Education legislation, most educators dealt with paraprofessionals in the roles of houseparents, child-care workers and attendants in institutions. We rarely dealt with them in the classroom. In many cases, no criteria or standards for care of the clients were established.

At this point, I feel the need to define the terms "accountability" and "paraprofessional" as they are used in this paper. Vergason (1973) aptly described accountability as follows:

> Accountability means the schools will be held accountable for producing results . . . No longer is it acceptable to say that, because of the child's environment, his poor genes, his lack of motivation, or his father's not being in the home, the child cannot learn or it is his fault or his parent's fault that he does not learn . . . Thus, the first element of a program of accountability is for schools to state what their objectives are and to have their success judged by how well they reach these goals. Second, schools are called upon to have outside or independent audit . . .

The term paraprofessional refers to any person, not specifically trained in a professional area, who directly delivers a service to a client and is supervised by a professional who has the ultimate responsibility for that client's progress.

Accountability Schema -- Institution

In 1973 I was employed as a program director at a midwestern institution providing 24-hour care for a retarded population. During the three years that followed, I developed an accountability schema which resulted in the training and community placement of over 50% of the children in my program. These children were profoundly and severely retarded (under 30 IQ). A ward clerk, 4 untrained supervisors, 35 attendants and myself were the full-time staff for 80 children. When I was transferred (for only 6 months) to a unit having only blind retardates, this same schema was used. Dramatic and significant results were obtained in many areas which will be reported in another paper.

The following steps were taken for program institution:

1. Clients were *grouped*, according to ability, into groups which were realistic for stable coverage. (In this case, a one-ten ratio was the best we could do).

2. Permanent group leaders were assigned. Personnel would change only for the two rest days of the permanent group leader (some staff were assigned to float positions).

3. Discussion with staff for mutual setting of goals (What does every child need for normal growth? What do these children need? What resources are available? What's possible within the structure?).

4. Eight 16-hour schedules were designed which provided a specific time during which training would occur toward meeting specific goals (These included toilet-training, eating and drinking skills, health & hygiene, gross motor, attention-span training, leisure-time games, etc.).

5. Writing the program which was scheduled for each group.

6. Setting up monthly assessments on an uncomplicated form to provide feedback to the program designer.

7. Preparation of a bar graph which would indicate the progress made by each student and provide motivation for attendants.

Accountability Schema -- Mandatory Special Education

In December 1975, Mandatory Special Education became a reality on the campus of that same institution. Shortly thereafter, I was employed as a supervisor for the school system having the responsibility of providing the educational service. My area of responsibility included all of the multiply impaired individuals, ages 0 to 25. The ratio for this population is one teacher and two instructional aides serving nine students.

The accountability schema is set up as follows:

1. Assessments are done in each area of curriculum with each child.

2. Performance objectives, based on the assessments, are written and given to the instructional aide along with a schedule.

3. Method and content are modeled by the teacher or itinerant person. Active monitoring is needed by the teacher so that conditions needing to be changed (in order that the student meet the goal) are identified immediately.

4. Classroom visual aids give the visitor the goals toward which the individual students are working.

5. Besides the initial placement meeting, a formal Administrative Review is prepared on each student specifying the Performance Objectives then being emphasized.

Paraprofessionals and professionals both need heavy in-service in the following areas:

1. Writing of behaviorally stated performance objectives

2. Techniques of behavior modification

3. Human growth and development

4. Interpersonal relations

Administration needs to be sensitive to the paraprofessional's desire to go further with his/her education and provide opportunities for growth.

In setting goals, writing performance objectives, monitoring and reporting our progress, we provide a structure within which the paraprofessional functions more efficiently, provides input into the student's program and begins to assume a critical role in the team approach to special education.

MODEL VISION PROJECT: STATUS REPORT

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Introduction

The Model Vision Project (MVP) is a demonstration service center based at George Peabody College for Teachers in Nashville, Tennessee. It has been supported since July 1975 by a contract with the Bureau of Education for the Handicapped with the Office of Education. Currently, the project serves 99 severely and profoundly multihandicapped blind children and youth in a nine-county region. A three component approach is used in delivering services. The diagnostic component provides comprehensive assessments of each child and prepares recommendations for programming. The field services component develops a comprehensive service delivery system. The training and evaluation component upgrades the competencies of personnel who work with the target population and evaluates the effectiveness of center operations. This paper will describe the activities within the three service components during the first year of project operation.

Major goals of the diagnostic team are assessment and programming for educationally relevant visual abilities, developmental functioning levels, and modes through which learning is best facilitated. Throughout the process of the evaluation the team identified the child's visual status, cognitive-adaptive level, communication mode, and mobility status as the criteria upon which to base the decision on how and what to teach multihandicapped children whose vision was one of their primary handicapping conditions.

Visual Status

Assessment of functional vision has been a major area of emphasis in the diagnostic component. Barraga's Visual Efficiency Scale (1970) and various forms of picture and symbol charts proved much too difficult for the MVP population and gave no indication of structural implications of visual abilities. Ideas offered by Faye (1968), Sheridan (1973), and Sloan and Savitz (1963) were combined with observations of multihandicapped children as they interacted with various materials to form the visual screening inventory. Developed primarily for teachers and paraprofessionals, the inventory offers suggestions for using common objects to assess sensation, perception, orientation, convergence, tracking, near and far distance vision, visual-motor integration, and structural visual abnormalities.

Each child's visual status was ascertained via the visual screening check list developed by the MVP project from which derived the categories of total blindness, sensory awareness, and functional vision. Children assessed as totally blind manifested no response to light or motion. Those who only regarded or tracked lights and objects, but for whom vision was not a viable learning channel, were classified under sensory awareness. Children demonstrating a gross measurable acuity of 20/400 or better and whose vision was the primary learning mode, were determined as having functional vision. Thirty-eight percent of the MVP population manifested total blindness, 38 percent functional vision, and 24 percent sensory awareness.

Cognitive-Adaptive Level

The Bayley Scales of Mental Development, the Stanford-Binet, the McCarthy Scales of Children's Abilities, the Merrill-Palmer Scales of Mental Abilities, the Detroit Tests of Learning Aptitudes, and the Developmental Activities Screening Inventory were primary tools employed to ascertain intellectual levels as defined by criteria set by the American Association of Mental Deficiency. The breakdown of the MVP population yielded 59 percent falling within the profound range, 22 percent within the severe range, 13 percent within the moderate range, and 6 percent within the mild range.

Communication Mode

The diagnostic team defined verbal children as those who orally expressed themselves through meaningful communication as opposed to nonverbal children who communicated primarily through cries, smiles, pulling, and pointing. Sixty-five percent of the MVP population are nonverbal while 35 percent are verbal, although 10 percent of the verbal children are primarily echolalic.

Mobility Status

Children displaying independent means of ambulation were defined as mildly physically involved, while the moderately physically involved were defined as requiring some supportive means to ambulate. Severely physically involved children were totally non-ambulatory and constituted 32 percent of the population, and the other two categories evenly comprised the remaining 68 percent.

The children demonstrating functional vision comprised the largest percentage of the verbal and the mildly to moderately physically involved and, although none performed intellectually below the severe range, the majority did not employ their usable vision to its maximum capacity. Ophthalmologists have provided valuable information regarding physiological implications for visual development in multihandicapped children. Determining what specific demands to place upon the child in the classroom has remained primarily the task of the teacher who has had the opportunity to observe visual behaviors over time.

In the past we as teachers have tended to focus our training programs primarily on the child's visual needs rather than considering the effects multiple handicaps impose on the potential to develop residual vision. Particularly at the lower levels the data has indicated that as the extensiveness of neurological impairment increases, the degree of functional vision decreases.

The most educationally relevant implication for programming yielded in the assessment process has been that the majority of the MVP population use their vision on a level equivalent with their mental age. The cognitive domain appears to be the critical element to consider when programming training procedures. Only through structured activities adapted to each child's cognitive range and behavioral management techniques have we been able to train multihandicapped children to develop and adaptively use their vision.

The diagnostic component works closely with field services to involve primarily caregivers and classroom teachers in the evaluation of the total child and his life space and in developing adaptive and visual behaviors. Interrelationship of the two components are critical for facilitating opportunities for effective carryover of programming suggestions into home, school, and community.

The major goal of the field services component is to develop a comprehensive service delivery system for the severely/profoundly multihandicapped blind children and youth located in a nine-county region. The expected outcome is a system which will provide services for all clients from birth through 21 years of age and will provide appropriate services for all clients regardless of functioning level. A three-pronged strategy was devised to meet this objective: 1.) Full utilization of existing resources; 2.) expansion and enrichment of established programs to meet identified needs; and 3.) establishment of new services to complete the comprehensive plan.

Existing resources in the community were extensive. However, gaps between programs resulted in inadequate services for many children and youth, and voids between programs resulted in no services for a small portion of the target population. Existing educational services included the state residential school for the blind, the state residential and training facility for mentally handicapped persons, itinerant services provided by the public school system, and resource teachers in the public school system. Other community resources included the state agency for the blind and several peripheral service organizations. These resources were incorporated into the overall plan and became the base for the development of a comprehensive service delivery system.

Expansion and enrichment activities were designed to upgrade the services of established programs. Ancillary support services from six project staff members were a major part of the enrichment activities. Support services included home teaching, mobility training, parent training, teacher training, pre-vocational training and social work services. In some cases, services were provided directly to individual children and families. In other situations, services were provided indirectly in the form of consultations with teachers and other professionals.

An intensive, specialized in-service program was also developed to upgrade the competencies of paraprofessionals in the established programs. Special training packets on topics such as attitudes toward blindness, common eye problems, the effects of blindness on learning, and mobility techniques were prepared for the in-service training sessions. Special techniques were demonstrated to supplement the formal instruction. Initially the training was conducted by project staff members. Later in-service trainers from the cooperating agencies and institutions assumed the responsibility of training their direct service personnel.

In-service training for teachers and other professionals was conducted during regularly scheduled meetings. These training sessions were led by special guests who discussed topics such as vision screening, physical therapy, and data collection. In addition, innovative teaching techniques and special materials developed in the project were shared. These training sessions improved the competencies of the participants.

Cooperative efforts resulted in the establishment of two new programs to fill gaps in existing services. These new programs were an infant/toddler day school program for children from birth to four years of age and three public school classrooms for primary, intermediate, and secondary age children. The addition of these new services completed the comprehensive plan and resulted in a system which approached the ideal model of a full range of services at the home, school and agency levels.

The activities resulted in substantially improved services for the target population. In the coming year, field services will expand to attend to the needs of children in the rural sections of the target area and will expand and enrich established programs. This strategy hopefully will prepare the permanent community agencies and institutions ultimately to assume complete responsibility for serving this population. However, the overall impact of field operations can only be determined by data-based evaluation at each level. Therefore, the field service activities are continually monitored to insure completion of goals.

The effective evaluation of a large-scale service delivery system such as the Model Vision Project demands a broad evaluation plan with different categories of data and methods of data analysis at each level of program implementation. The MVP's evaluation plan emphasizes four areas of project operation, including: 1.) The educational-developmental progress of children enrolled in MVP-affiliated instructional programs; 2.) the effectiveness of parents, agency staff, and paraprofessional training activities; 3.) the overall effectiveness and efficiency of the service delivery system (e.g., cost/benefit analysis); and 4.) research on innovative service delivery strategies. We are reporting at this time principally on the results of the data-based evaluation of the educational progress of the children enrolled in MVP classrooms.

Data regarding the educational and developmental progress of children in educational programs is essential for evaluating the effectiveness of the program and guiding program modifications in the event that the children are not progressing satisfactorily. Standardized assessment instruments can provide some of the needed information on the progress of the children; however, they may be too insensitive to detect the small educational and developmental improvements characteristic of lower functioning children with multiple handicaps. Further, the content of standardized instruments may not map accurately the instructional areas included in the program's curriculum.

To circumvent the problems inherent in standardized assessment, the program evaluation staff of the MVP selected a data-based, precision teaching system as a viable solution to the classroom measurement problem. Precision teaching is a measurement tool which can aid teachers in planning, executing, and evaluating their teaching activities. The system has five basic steps which are followed for each child. They are: 1.) Identifying or pinpointing behavioral deficits in a child's critical skills repertoire; 2.) developing short- and/or long-term behavioral objectives concerning the identified deficits as a basis for planning an intervention program; 3.) implementation of the intervention program designed to ameliorate the behavioral deficits; 4.) continuous collecting and graphing of frequency or rate data on the child's progress in the instructional program; and 4.) evaluation of the child's progress and implementation of program procedural modifications as suggested by the evaluative data.

The first phase of the implementation of the MVP's precision teaching data collection system consisted of the training of MVP teachers and staff in data collection procedures. This training was accomplished through an in-service workshop on precision teaching conducted by the Project's Program Evaluator. The second phase of the implementation of the MVP's data collection system is currently ongoing. This phase consists of the continuous collection of data by the classroom teachers and aides, and monitoring of each child's progress in his instructional program. These activities proceed under the indirect supervision of the MVP Program Evaluation staff.

A major problem which is inherent in the use of the precision teaching system is the infringement on the classroom teacher's direct teaching time as a result of data collection activities. This problem has been minimized in the MVP data collection system through the use of two tactics. First, a behavior sampling strategy was employed which entailed having each classroom teacher generate a list of behaviors for each child in his/her classroom for which instructional activities were planned, and from these lists, selecting one behavior for each child on which data would be collected. These behaviors were selected so that evaluative data would be available on all classes of behavior comprising the educational program (i.e., language, gross and fine motor, academic, self-help, etc.) across children, although no one child would have data collected on his progress in all behavioral categories in which he was receiving instruction. For example, one child in the infant classroom might be having data collected on his walking program, and another child on his progress in language development.

The second strategy which has been used to reduce teacher time devoted to data collection has been the utilization of Peabody College practicum students as adjunct data collectors. The implementation of this strategy consisted of training the college students in the use of precision teaching techniques and periodic supervision of their data collection activities by the Program Evaluation staff.

The adoption and implementation of the precision teaching system in the MVP classroom has resulted in important and beneficial information. Continuous monitoring of the children's progress data has enabled the teachers to determine quickly whether the children were benefiting from an instructional activity. Consequently, the amount of valuable instructional time wasted on ineffective programs has been minimal. The teachers have also found the data useful for planning modifications in the children's instructional programs to maintain the children's satisfactory performance levels. Further the teachers have found the graphic display of the children's progress very reinforcing because it provides immediate feedback on the effectiveness of their teaching efforts. Hopefully, this continuous and precise evaluation of specific educational and training procedures will result in guidelines of documented effectiveness for teaching multiply handicapped, visually impaired children.

Conclusion

This paper has presented a few of the most significant features and accomplishments of the Model Vision Project during its first year of operation. Our description of project components belies their significant interdependence. Diagnostic evaluation without programmatic follow-through is of little value; intervention without thorough evaluation is meaningless; and services without trained personnel prevent the development of firm data on which critical program judgments should be made.

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JOANN: WORKING TOGETHER TO HELP HER SEE

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and

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Introduction and History

JoAnn, now eight years old, and her resource teacher (RT) recently played a game of concentration. The purpose was an exercise in visual memory. The playing cards were made of construction paper. Mounted on a white rectangle was a colored shape; around the shape was a black felt-tip outline. The four common shapes in assorted colors were used. Each card had an identical mate. While playing, JoAnn referred to a secret to winning the game. She said, "If you could see good, you could do the secret." Think of what her secret might be as her case history is reviewed.

The eye report form in the file before the RT met JoAnn in 1974 stated that she had hereditary congenital cataracts. Visual acuity was nil in the right eye and finger counting in the left eye. She had had several eye operations, the last one being between preschool and the first grade. Her intelligence was high normal.

As a four-year-old preschooler, JoAnn experienced a divorce in her family. Her teacher commented that JoAnn expressed uncertainties about her feelings toward the situation. She was a friendly but hesitant child. Both the braille and print alphabet were introduced to her. JoAnn preferred to work with the two-inch print letters. She evidenced a shorter attention span and fatigue when working with braille. Her math concepts were above average.

In her second year of preschool she was more secure in her home life and showed excitement when discussing a weekend with her father. She still moved hesitantly and lacked whole muscle coordination. The same tenseness was noticed in the preschool swim program.

JoAnn was taught both the braille and print alphabet. Her teacher felt certain that braille would be the medium through which JoAnn should be taught. She was not able to see 30-point print, let alone large type. At this point, JoAnn had her last of a series of eye operations in hope of improving the residual vision in her left eye.

JoAnn entered the first grade. She spent 1/3 of her day in the resource room and the remaining time in an elementary school first grade classroom. She was described by the first grade teacher as being insecure; she cried frequently and would shake nervously at her desk. It was suggested, at the end of the year, that JoAnn be retained in the first grade; her parents were bewildered as to the reason. They were told she was immature and had unsatisfactory braille skills. There was a real question as to why a child with a normal IQ and two years of preschool was being retained.

When the RT met JoAnn in August of 1974 she was sitting at a braille desk at the back of her first grade room. When approached she moved her face toward the RT and gazed at a pin on her dress. She said that it was pretty, touched it, and asked what it was. It was a small daisy pin on a busily patterned material.

In conversing with JoAnn and walking down to the resource room the RT observed that she was quite sociable but very nervous, with strained facial muscles, no smile, uncoordinated rigid body movement; she walked with bent elbows and tightly clenched fists. She avoided bumping into large objects but stumbled on an obstacle which was below waist level.

She repeated that she had forgotten her braille over the summer but that she was a real good speller on a magnetic board. In experimenting with her on a chalkboard she evidenced many reversals in her print letters, confusion between her lower case and capital letters, inability to draw a slanted line, close a circle, or copy a simple design. She had no visual tracking ability and very poor eye-hand coordination. She was constantly reminded to watch her hands.

JoAnn's classroom teacher was concerned about her lack of interest in school. She wasn't having fun, following directions, or contributing to classroom discussions.

JoAnn dropped obvious hints that she wanted to sit at a little print desk. She was placed in the front of the room near the teacher's desk. Her attitude about school began to change. Her braille desk was kept in the back of the room. She did very little brailling as she was showing improvement and strong motivation with the 30-point print. The RT requested that JoAnn use a felt-tip pen for writing.

After three months the RT was convinced that the child should be functioning visually for most of the school day. The braille desk was removed from the room and JoAnn stayed on a maintenance level of braille in the resource room for about twenty minutes daily. Her attitude was one of frustration, memory loss, and fatigue during those twenty minutes.

It was obvious that JoAnn needed a low vision evaluation. It would be necessary to explore her eye history, eye health, near and distant acuity, and perceptual abilities. Her parents were in favor of following through with the request for such an evaluation; thus, she was referred to an optometrist.

Low Vision Evaluation

JoAnn is a prime example of a child in need of an interdisciplinary approach to visual care and academics. The interdisciplinary team for JoAnn consisted of her RT, the consultant for the visually impaired and multihandicapped of the DeKalb County Schools, her classroom teacher and principal, her mobility instructor, her parents, her ophthalmologist, and an optometrist. The team became responsible for JoAnn's visual care as well as her academics, visual motor skills, and mobility. The optometrist's role as a member of the team was to assess JoAnn's visual abilities and determine if she had potential for utilization of her residual vision. To help set the goals for JoAnn, the etiology of her condition had to be considered first. She had familial congenital cataracts. Her last surgery was on the left eye, 1-1/2 years before this exam. The second consideration was the stability of her condition. The opthalmologist considered the condition stable and JoAnn continued to see him at 6-month intervals.

The history of academic and visual care had to be investigated. It was here that insights were gained into the problem as it was seen by the group members. Having checked her history, the optometrist felt it best to question JoAnn as to what she envisioned her problem to be. JoAnn told him she wanted to be able to read print as did her classmates. By interviewing JoAnn he gained insights into her motivations, which could not have been stronger. From questioning various members of the team clues were given as to JoAnn's psychological nature and her need to be like her peers.

Prior to beginning the limited vision evaluation the optometrist had a consultation with JoAnn's parents to discuss all unanswered questions including fee considerations for the visits and for any aids decided on. To ensure that JoAnn would receive a lasting benefit from her limited vision care, it was necessary to establish each of these factors before beginning.

JoAnn had a regular aphakic prescription with a standard bifocal, but no limited vision help at that time, and no family consultations concerning limited vision care, use of microscopes, telescopic prescriptions, non-optical aids, and vision development and perceptual skills.

The optometrist requested that the RT accompany JoAnn for most of the visits since not only is the teacher a great asset to the doctor, but the interaction is necessary in reaching the jointly established goals. It was not enough to examine only the eyeballs, consideration had to be given her visual motor integration abilities and how they related to her functional and academic skills.

Observations were made concerning her mobility, including walking in the hallway and climbing into the exam chair. Distance acuities were taken, which can be related to functional and academic needs. Since over 85% of what is learned takes place at near vision, it was imperative that near acuities also be taken.

The ability of finger counting and two point light discrimination were checked for vision reflexes in JoAnn's right eye. She had no usable vision in that eye, but she did show good visual potential with her left eye. A meaningful color vision test was performed using the Ishihara plates for children and JoAnn was found to have normal red/green color perception.

An external, as well as an internal, exam of the eye structures was made. A thorough exam was also made of the anterior and posterior eye structures. A check of the front surface and curvatures of the cornea was invaluable in proper lens prescribing and corneal evaluation. Eye coordination and eye-hand integration were tested. It was found particularly useful to use finger puppets, such as "Big Bird," to hold her interest while checking fixation and eye movement ability.

With visually handicapped and multihandicapped children the optometrist often does not use the phoropter for testing but loose lenses or a lens rack with varying power lenses. After observations of the prescriptive lens needed, JoAnn was allowed to assess the lens by using loose lenses overtop of her own glasses. In JoAnn's case the optometrist wanted to check the effect on her visual ability using a contact lens. Although a slight improvement was noted, it was not significant enough, at the time, to merit prescribing. JoAnn also had a check of her eye pressure, since this check must be made on all visually impaired and multihandicapped children.

After determining the best lens prescription and realizing that JoAnn had the potential to be a seeing child, the limited vision evaluation was begun on her next visit. The use of telescopes with reading caps, high power microscopic lenses, and various lens adaptations were explored. A slant-top desk with good lighting was used in conjunction with near point materials which could be related to her school materials, including her reading book. Optical and non-optical limited vision aids, hand magnifiers, projection magnifiers, typoscopes, heavy lined paper and felt-tip pens were all used.

In using non-spectacle aids it was necessary to observe the amount of energy JoAnn had to expend on the task of reading instead of the reading itself. When the task of reading became more important than reading itself, the system had to be changed. JoAnn performed best with a high power microscope spectacle lens system. This necessitated that she hold the reading material very close to her eyes, but she did not seem to mind.

Although the optometrist was sure what prescription would be best for JoAnn, the suggestion was not made until the staffing. It was felt that all members of the interdisciplinary group should have input concerning JoAnn's future care.

As the RT and the optometrist evaluated JoAnn, an appreciation was gained of her visual potential and the two were able to look back on the events with great insight. JoAnn's teacher possessed two traits which are imperative for professionals dealing with the visually impaired and multihandicapped: She was first inquisitive and secondly observant. Both factors helped her to realize JoAnn's vision potential. The professionals who refer to optometrists indicate what questions they want answered. These people, as did the RT, say "I know this little girl can see -- how does she see?" These professionals help set the goals. As in the case of all the optometrist's vision evaluations, it then became necessary for the total interdisciplinary group to discuss goals, findings, and JoAnn's future.

Staffing

Soon after JoAnn's evaluation, seven key people met to discuss the results and found a continuum of views developing. These ran from being visually overzealous to being visually naive.

The RT was perhaps a bit overzealous to get JoAnn functioning visually, mostly due to the girl's own motivation of wanting to be a seeing child. All future aspects of JoAnn's vision utilization needed to be taken into consideration.

The optometrist felt the alternatives to JoAnn's limited vision problem were based either on lens system magnification or on print size adjustments. When using a microscopic lens at close range, JoAnn had constant and consistent vision at 4 inches. Telescopic spectacle systems with reading caps for near work gave her good functional reading ability at a greater distance of 8 inches. When using hand magnifiers the task of reading became secondary, as JoAnn's eye-hand coordination was not yet developed to handle these types of aids. Similar difficulties were found when using illuminated readers like the optiscope enlarger. Without high power magnification JoAnn's vision was not consistent enough at 4 inches to read efficiently. Since her present bifocal was standard power, focal point 13 inches, JoAnn needed print larger than 18 point at 4 inches.

JoAnn's father had very strong feelings about her problems, and since no member of their family ever had to learn braille, he did not feel his daughter should have to either. No person, including JoAnn's grandfather, had ever shown a deteriorating condition. Since JoAnn's condition is familial, her father felt her vision would remain stable unless she was subjected to some other disease or injury. From a psychological standpoint, JoAnn strongly objected to braille. Her father, whose cataract problem is not as severe, was oriented to his daughter learning to read print and wanted to have a reading system which would enable her to function with regular print and be cosmetically acceptable as well.

JoAnn's mother, like her father, had noticed vision potential. She had worked with the girl's previous teachers in a cooperative way. She was not aware of low vision care but was interested in it. Her main concern was getting JoAnn through the first grade successfully this time.

The consultant for the county-wide visually and multisensory impaired programs supported everyone's views. She was wise to the benefits of low vision aids as well as the practicality and the drawbacks. She wanted the best for JoAnn: Success in school. She was aware of the importance of functioning in a printed world: Reading newspaper headlines; finding the restroom; reading personal mail; and being more like, rather than unlike, her peers. Questions were raised as to reading speed, the extra time the classroom teacher needed to spend with her, the stability of her condition, and the negative feeling JoAnn had toward braille. She asked that the possibility of a combined print and braille program be probed.

JoAnn's principal was instrumental in the educational program. As he stated, "It is important that we decide what will be best for JoAnn and then pursue that direction full force."

JoAnn was one of 24 children in the class of a teacher who had been in the school for five years and had, in the past, had visually impaired children integrated into her class. Her braille readers were fluent and kept up with the reading group. Her print readers had been functioning with sight since birth; they were able to see the pictures, maintain normal reading speeds, and keep their place on the page. Due to the fact that JoAnn had been on braille the previous year, she was not able to compete visually with her peers, she moved around as a blind child would, she couldn't discriminate the pictures nor could she keep up with the reading group. It seemed logical to the teacher that her pupil would be more successful with braille.

Conclusion

For over an hour the group shared concerns and experiences. The optometrist's recommendation was a high power microscopic bifocal, incorporated into JoAnn's spectacle prescription. Along with this she would need a strong vision development and perceptual program and emphasis on visual-motor activities. He agreed with all members of the group that JoAnn would benefit greatly by mobility training. Classroom seating position and correct near working distance were recommended. Suggestions on letter size for chalkboard activities, illumination, posture, and monocular depth perception clues were also given.

The RT agreed to follow-through with the above recommendations for vision training and try to help her student make friends with braille.

The consultant wanted JoAnn to become comfortable with braille. She also worked with the mobility specialist to emphasize the utilization of vision for travel and design a visual motor program for her.

Her father was 100% behind the recommendations and was pleased that JoAnn would use print and receive attention in other visual-motor activities. Her mother agreed to do all she could to help JoAnn, she was already drilling sight words after dinner and encouraging her to use her vision in play.

JoAnn's principal supported the decisions and was a source of strength for the RT as well as a sounding board for the classroom teacher. Through his coordinating and support the program was begun and each obstacle was dealt with with confidence and determination that the prescription was the best possible program.

The classroom teacher agreed to work with JoAnn when she was able. She requested that the RT sit in with their pupil during reading group and math group to help JoAnn keep her place. The RT copied work from the board for her and assisted her with handwriting.

Values

Following the staffing, the RT felt a need to work with JoAnn's teacher and class. As previously mentioned, JoAnn was socially sensitive. It was important for her to be accepted as a friend by the other children. Her awkward movements, thick glasses, and the closeness with which she held her work made her different from the other children.

The teacher decided that the best approach would be a Values Clarification Strategy called Values Voting. She began on the first day by describing the term *value* as "what you think about something or how you feel about something," then discussed the term *voting*. She then asked the class if any of their parents ever voted and if they themselves had ever voted at a club meeting; the rules for Values Voting were then discussed. The class had to vote with their hands, not their voices. A hand up in the air meant *yes;* a hand down by the side meant *no*. Since it was not felt that the children were ready for the concept of *pass,* meaning no comment, and since the goal was to involve everyone actively in *yes* or *no* responses, this term was not discussed. The strategy was divided into two-minute sessions over a five-day period. Questions were supplemented with excerpts from Marlo Thomas' recording, "Free to Be You and Me."

These are examples from each day's list of questions.

Day One

1. Have you ever voted before?
2. Do you have a pet at home?
3. Do you know anyone who wears glasses?
4. Do you like peppermint stick candy ice cream?
5. Do you like to watch TV?
6. Do you have a friend?
7. Would you like to hear a song about what some friends do together? (The song "Friends" was played.)
8. Would you like to vote tomorrow?

As you probably noticed it is wise to use non-threatening questions until the children are comfortable with expressing themselves.

Day Two

1. Do you like the weather today?
2. Do you like asparagus?
3. Do you think a fat person looks funny?
4. Do you have brown hair?
5. Has anyone ever teased you?
6. Is it fun to be teased?
7. Have you ever really hated someone?
8. In some ways are you different from the person next to you?
9. Do you love someone?

Day Three

1. Do you have all of your teeth this morning?
2. Do you wear glasses?
3. If you wear glasses, do they help you see better?
4. Do all glasses look the same?
5. Do you like to wear glasses?
6. Do you have a funny nose?

Day Four

1. Do you know someone who cannot walk and uses a wheelchair to help him move around?
2. Do you know someone who hears a hearing aid in his ears?
3. Does it help him hear better?

4. Do you like Tootsie Rolls?
5. Does everybody look the same?
6. Is it nice sometimes to have a friend?

Day Five

1. Does everybody like ravioli?
2. Does a hearing aid help some people?
3. Do different people need different kinds of glasses to help them see better?
4. Do some people need a wheelchair to move around?
5. Does everybody have to be the same as everybody else?
6. Do you love someone?
7. Do you ever get angry at the person you love?
8. Do you feel happy to have a good friend?

First graders do have values, and JoAnn did make friends.

On June 6, 1976, JoAnn completed the second grade. She scored a 49 out of a possible 50 on her grade level reading test using 13-point print and her high power bifocal. In math she scored a third grade, fifth month level. Due to JoAnn's negativism toward reading braille, she is not presently using it, but she is frequently exposed to braille readers and the usefulness of it for those children is discussed with her.

1. Would you like to know who won the game of concentration which was played at the beginning? (JoAnn did.)

2. Would you like JoAnn to tell you what her secret to winning the game is? ("You can see through the back of the card!")

USE OF LOW VISION AIDS TO SUPPLEMENT LARGE PRINT MATERIALS

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Over the years the tool most commonly used by teachers in the education of visually handicapped children has been the large print textbook. Naturally, it was effective only for those children with sight disorders that responded well to magnification, but with these children (approximately fifty percent of all visually handicapped children) the large print textbook long ago proved its worth in the classroom. There can be little doubt that tens of thousands of children and adults have profited from programs utilizing these materials.

Occasionally, low vision aids or magnification devices have also been used with visually handicapped children in educational settings. Some of these have been hand-held, others stand-mounted or designed to lie directly over the reading material, and a few have been attached to the head of the student. While teachers and clinicians have reported favorable results with these magnification devices from time to time, there was no evidence that these approaches compared favorably or unfavorably with the more traditional large print textbook. A study which would compare these two tools appeared desirable for several reasons.

In the first place, it is often difficult for teachers to obtain the large print textbook materials they need because the materials are not available, and/or it takes too long to obtain them. In the present days of individualized instruction, generally based on many sources rather than a single textbook, the problem of obtaining materials when needed has grown considerably. Also, the tendency for school districts to change basic programs and materials much more often than in former years has contributed to the problem.

A second problem with large print is the fact that reference materials needed by students are almost impossible to obtain. Except for dictionaries, there is almost nothing available.

There is also the relatively high cost of large print books and materials. In addition, many teachers appear to believe that the large, heavy and conspicuous nature of large print texts inconvenience the visually handicapped child and tend to call attention to his handicap.

A magnification device, on the other hand, appears to be a possible way to overcome some of the problems associated with large print materials. Certainly, it would be more versatile; it could be used with basic materials and other materials such as reference books. It could solve the problem that teachers face when books or materials or even tests are not available in large print editions. The one-time cost factor would be an advantage, and many of the available devices are neither large, bulky nor conspicuous.

A professional optometrist and University of South Carolina lecturer and a professor of educational research at the University (Dr. George H. Lackey, Jr.) decided to conduct a statewide, carefully controlled experiment to determine if children could perform as well with a magnification device as with large print materials.

The first step was to select a device to compare with large print books. The Visolett, manufactured by the Sedlinger Optical Glassworks in Berlin, West Germany, was chosen. The Visolett has a 1.7 magnification and is used while it lies flush on the reading material. Although it is manufactured in various diameters, the 39 mm lens is the most commonly used model and is perhaps more appropriate for educational purposes. The lens is aspheric in design and has edge-to-edge clarity. It also has the advantage of amplifying the existing light so that reading may be accomplished without auxiliary lighting. It is small and inconspicuous when being used and comes with a plastic case suitable for carrying in the pocket or purse. One of the present investigators had used it in a clinical situation for some time where it appeared effective.

Essentially, the research project was designed to answer four questions: 1.) Would children *read as well* using the Visolett as the large print textbook, 2.) Would children *perform mathematical tasks* as well using the Visolett as the large pring textbook, 3.) Would children *read more* if they had a Visolett, and 4.) Would children who had used both the Visolett and the large print text in school *prefer the Visolett.*

The investigators elected to use a highly precise, Latin Squares research design in which all children in the study would use both the Visolett and the large print text at different times and would be tested after using each approach. Approximately one hundred children in grades 4 to 9 were selected from programs for the visually handicapped in South Carolina. These children were located in approximately two-thirds of the state's counties. The study was conducted with the assistance of the South Carolina State Department of Education during the 1973-74 school year. The primary analytic procedure used was the analysis of variance technique, and the power of the analyses to determine differences if they existed was found to be extremely high.

The results of the study indicated that students did read as well using the Visolett as they did when using large print materials. They also performed mathematical tasks as well with the Visolett as with the more traditional approach. Although the findings were not conclusive on the third question, there was a strong tendency for students to read more if they had a visolett. With respect to the preference question, the study did not establish definitely which approach students preferred.

In whatever manner the data are viewed, it must be concluded that strong evidence has been generated that the Visolett can be a valuable tool in the education of visually handicapped children. As a group, the students performed reading and mathematical tasks as well using one approach as the other, and there was a strong indication that they will read more using the Visolett. But under no circumstances should the reader conclude that the Visolett is as effective as large print materials for all students with visual problems. While in general students do as well with one as the other, there were cases in which individuals did better with large print. As in almost all educational matters regarding student performance, credibility must be given to the influence of individual differences.

Nevertheless, the Visolett can be used exclusively with those students who prefer it over large print, and it can be a valuable supplement to the large print textbook for all children, particularly in those cases where necessary materials are not available in large print such as workbooks, answer sheets, and reference materials.

THE FIRST OLYMPICS FOR THE BLIND

Dr. Charles E. Buell

Olympics for the Blind
San Juan Capistrano, California

Thirty athletes from the United States will compete in the first Olympic Games for the Blind, to be held in Toronto, Canada, August 3-11, 1976. Competition for the blind is part of a larger event, the 1976 Olympiad for the Disabled. From nearly 60 countries will come 1,100 wheelchair, 300 blind and 300 amputee athletes. They will compete within their divisions, e.g., blind against blind. Athletes in each division will be classified according to degree of disability and will compete in their classification.

International competition for wheelchair athletes originated at Stoke Mandeville, England, in 1952. The Stoke Mandeville Games continue to be held annually. However, in Olympic years the games are held in the country hosting the regular Olympic Games. The sponsor of the games is the International Sports Organization for the Disabled with headquarters in England which determines the rules to be used in the Olympics for the Disabled. In previous Olympiads only wheelchair athletes participated. For the first time blind and amputee athletes will participate in 1976.

The site for the 1976 Olympics for the Disabled is 260-acre Centennial Park, Borough of Etobicoke, in Toronto. The track and field events will be held in the stadium which has a seating capacity of 2,700, and almost as many more spectators can be accommodated on grassy slopes. The paved quarter-mile track has eight lanes. The Olympic-sized swimming pool has seating for 1,500. There are two basketball courts in the gymnasium and seats for 2,500 spectators. The facilities for other sports are also adequate.

The three-hour opening ceremony will be held at nearby Woodbine Race Track with grandstand seating for 16,000. During the ceremony, athletes will march, take an oath, and view the torch lighting. This will be followed by a spectacular entertainment program.

Living quarters for 1,700 athletes and 600 coaches will be in student residences at York University and the University of Toronto. A fleet of school buses, modified to carry both wheelchair and able-bodied passengers, will handle transportation.

THE PROGRAM FOR BLIND ATHLETES

There will be competition for male and female blind athletes 16 years and older, except in swimming for which there is no minimum age. Competitors are divided into Groups A and B. Group A includes those who are totally blind or who have no more than a small amount of light perception; athletes who have 1/200 to 10/200 visual acuity will be in Group B. Since wrestling and distance running will be demonstration events, the above rules do not apply to these sports.

The official events in which United States athletes will enter are 60m and 100m dashes, 1,500m walk, standing broad jump, long jump, high jump, shot put, discus throw, pentatholon, and 100m races in freestyle, backstroke, butterfly and breaststroke swimming. Sprinters will be required to run one at a time toward a caller; guide wires or ropes will not be permitted. The United States will field two goal ball teams, one for men and one for women. In goal ball the object is to roll an audible ball past the opponents and over their goal line. The United States will have no entries in the javelin throw, medley swimming, or bowls.

Twelve track and field and swim athletes were selected by the Committee for the U.S. Olympics for the Blind. This Committee met late in February in Indiana to compare performances of athletes known to members who represented various segments of the blind population of the United States. Dr. Charles Buell, California, is the Chairman of the Committee and Team Manager. Other members of the Committee are Dr. David Beaver, Kentucky; Lou Moneymaker, Indiana; Leonard Ogburn, Arkansas; Sam Paradise, New York; John Ross, Minnesota; and Judy Whyte, Indiana. Four volunteer coaches were selected: Lou Moneymaker, track and field; Judy Whyte, swimming; Leonard Ogburn and Dr. David Beaver, wrestling.

The information most commonly used by the Committee was obtained from results of track meets of associations of schools for the blind. Information was also sent to the Committee by blind athletes who had learned of the Olympics from various sources. News about the games was carried by magazines circulated to blind readers and to schools and agencies for the blind as well as in a few regular education journals. Information on how to apply for the games was mailed to 400 agencies and schools for the blind.

The Committee also selected a team of distance runners to compete against sighted Canadians who are 40 years and older. Distance runners will be putting on a demonstration because distance running is not an official event in the 1976 games. Totally blind athletes will run with partners who have vision. Service clubs in the United States will be paying travel expenses for the distance runners who will be guests of Canadian families for a few days.

Another sport which will not be official in 1976 is wrestling. The primary purpose of the distance running and wrestling demonstrations is to persuade officials from overseas to accept these sports as part of the 1980 games in Moscow. There will be three meets for the United States blind wrestlers, one against blind Canadians and two with sighted Canadians.

There are hundreds of good blind wrestlers competing on all levels in the United States: High school, college, AAU and Federation. The only fair way to select a team would be to hold a try-out camp; such a camp had never been held for blind wrestlers. The Committee for the U. S. Olympics for the Blind selected the Kentucky School for the Blind as a site. About 140 wrestlers and coaches were invited to attend and approximately half of them will attend camp between July 25 and August 1. Travel expenses to the camp must be obtained by the wrestlers or from service club sponsorship. The round trip, Louisville to Toronto, for ten wrestlers and two coaches will be paid by Olympics for the Blind. While in Canada the wrestling team will be housed at the Canadian Institute for the Blind. The Canadian hosts are raising funds to defray these expenses. The wrestling will be international freestyle, which is not familiar to many blind competitors, and one of the purposes of the camp is to learn about this type of wrestling. Everyone will benefit from the camp. Individual instruction in freestyle wrestling will be given by university coaches and nationally known wrestlers. Sharing experiences with visually impaired athletes on all levels of competition and from all parts of the country will enable one to gain much useful information. Those who travel long distances to camp are likely to gain information about our country.

PHILOSOPHY OF THE OLYMPIC GAMES FOR THE DISABLED

Handicapped athletes gain the same benefits from Olympic competition as do regular athletes. For the individuals involved, there is the joy of competing with their peers, the opportunity to travel, the pleasures of comradeship, and the honor of representing their country. The games will promote sportsmanship and friendship among disabled groups of many countries. By their performances the impaired athletes will gain the respect and recognition of thousands of able-bodied people who attend or see the action on television or read about it in the newspapers. The games will give much confidence to the individuals who compete, as well as to disabled individuals who hear, watch, or read about the games. The concept of a disabled individual gaining benefits from national and international athletic competition is comparatively new.

FUNDING

The National Wheelchair Athletic Association has given advice and advanced some money to get the fund raising campaign for blind athletes underway. NWAA has also given assistance in ordering uniforms and making some travel arrangements. Most of the fund raising was under the direction of the Committee for the Olympics for the Blind, particularly its chairman. Service clubs, two foundations, and a fraternal organization contributed, as did a few schools and agencies for the blind. Future teachers of the visually handicapped in two universities conducted car washes and bake sales to raise funds; a number of individuals have donated in smaller amounts. The mailing of thousands of fund raising letters was not very fruitful. Hopefully, enough money will be raised to cover the expenses of the United States blind athletes. They are thankful for the support given them. Even in this Olympic year, fund raising has not been easy.

THE FUTURE

Mr. Benjamin Lipton, President of NWAA, is the representative of the International Sports Organization for the Disabled in the United States. Many blind athletes are interested in forming a permanent organization.

The purpose of such an organization would be to sponsor annual regional, national, and international competition similar to the program conducted so successfully by NWAA. Regional competition would be held to qualify individuals to a national meet. The best athletes at a national meet would be invited to participate in international competition and demonstrations. Only one organization of blind athletes in each country will be recognized by ISOD and permitted to participate in Olympiads for the Disabled. Therefore, an organization of blind athletes patterned after the NWAA would likely meet the approval of the International Sports Organization for the Disabled.

If a reasonably secure source of funds can be found, a permanent organization of blind athletes and their supporters will surely become a reality.

SEXUALITY: DELIGHT OR DILEMMA

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I am speaking in an attempt to shed some light on the plight of the handicapped in a society which has not yet become comfortable with sexuality, let alone fully accepted the handicapped as having human capabilities. Handicapped individuals share in all aspects of man's humanity. Their specific disabilities and their adjustments to them are the only differences between them and other people. The handicapped are hindered from becoming fulfilled humans by the fears, guilts, and misconceptions of society. Society has denied them two basic needs -- realistic and positive identity as sexual beings and the opportunity for sexual expression and sexual relationships. Seifkes (1976) states:

> Sexuality is a birthright that should be understood as an integral part of one's total personality and as finding expression in all that one does. Sexuality is a very important part of one's wholeness as male or female and is accordingly central to the understanding of one's very being and one's interactions with others. In that sense, every human relationship is a sexual relationship, and how we behave or act in any given social situation can in effect be described as sexual behavior or activity.

Normal Development

Under normal circumstances a child's "gender identity" is established by the age of two or three. Through the examples of the parents, the concepts of maleness or femaleness become internalized. Through growth, these concepts become modified by interaction with the human environment -- parents, peers, siblings -- those called "significant others." The individual is bombarded with sexual images as to sexual roles and behaviors. The child experiments with these and either accepts or rejects them. All the games, social activities and part-time jobs in which the individual takes part are steps toward the models he has observed. Most children have overt sexual experiences such as masturbating, exploring visually or tactually their own body or another's body, as well as the usual dating behavior of kissing, fondling, and touching. *Playboy, Playgirl, Penthouse,* Pepsi Generation advertisements, and the very sexy clothes worn by the person standing next to you in the elevator, all play their role in the development of sexual behavior. Because of their acceptance as full human beings and their participation in the process of socialization, the non-handicapped person develops a fairly realistic self-concept as a sexual being.

What about the visually impaired child? For those with parents who truly understand the ramifications of their child's handicap, there may be little difference. But for many the growth process is one of denial.

Families of blind children face two problems: 1.) The temptation to treat their blind child as being innocent of sexual thoughts or feelings. If the child is denied information about sex, he may feel guilty about confused and unrealistic sexual fantasies or be too uninformed to avoid sexual exploitation. 2.) The tendency to be over-fearful of sexual involvement. If the child is overprotected and prevented from learning the necessary social skills, he or she will be unable to socialize normally with the opposite sex. Overprotection restricts opportunities for learning and develops overdependency with feelings of inadequacy, resentment and hostility, thus compounding the handicap (Bidgood, 1974).

Teacher Obligation

We as educators have an obligation in fulfilling our clients' or students' right to live fully. Educators have not dealt with the fact that even the blind are sexual beings. We need to know how to cope with those who would deny the blind their sexuality. Those who protest sex education courses say that if you tell them (kids) about sex they'll do it; I ask -- "If we don't, they won't?" These protestors seem to assume that knowledge is harmful. We have catered to this assumption by presenting sex education courses as little more than a class in sexual plumbing or a relentless pursuit of the fallopian tubes. Is it wrong to talk about love, intimacy, sharing, touching, homosexuality and -- masturbation?

Teacher Attitudes

The attitudes of teachers teaching sex education classes is a significant factor in learning and needs to be mentioned.

Information in all areas of human sexuality should be freely available to our students. There should be free access to qualified and sympathetic adults with whom they can discuss their questions and explore emotional reactions and values. Value judgments by the teacher should be avoided if possible. It should be stressed by the teacher that questions asked are important and legitimate (Kalma, 1976).

Parent Education

We as educators must educate the parents to help them in their adjustment to caring for a handicapped child. Most parents, it makes little difference if the child is handicapped or not, are uncomfortable in discussing sexuality with their children. Many parents are misguided by myths and misinformation, ignorant of many facts concerning sexuality, and may feel guilty about their own sexual thoughts and behavior. Parents need to understand that sex education begins at birth and continues all the time, in most places, from many sources. The question is not if their child should have sex education, but *how* and *by whom* (Kempton, 1972).

When a blind child, such as Elizabeth (Ulrich, 1972), has a parent who is unwilling to allow her child to follow in the footsteps of generations of blind children, grand things can happen. Elizabeth was allowed to explore the bodies of others. She was given the opportunity to make body image comparisons of herself to her mother (someday she will have breasts, just like her mother) and to a baby boy (a boy is different, and she was once small like that). What a marvelous way for her to discover what she was (minus the penis, of course), and what she might be someday.

Many parents would be more receptive to the topics of masturbation and premarital sex if they were informed that in learning about these topics, their children will learn if, when, and where they are appropriate (Turchin, 1974). Their children will learn to explore the value judgments necessary to validate their decision of whether to masturbate or not, whether to engage in premarital sex or not.

On the topic of premarital sex, Sol Gordon (1976) relates being asked, "Is it normal to wait?" to which he responded, "Yes, it is normal to wait, but if you do wait, I hope you don't expect a simultaneous orgasm on your wedding night, because then afterwards you might ask, 'For this I waited?'"

Value Clarification

If we are to assist our clients in becoming mature, socially acceptable adults, we must educate the educators and the parents as to the scope of human sexuality. They should become involved in workshops of "desensitization" that are designed to clarify their values and to help them become familiar with the total range of sexuality. If the parents and educators have not yet become comfortable with their own sexuality and the sexuality of others, they will need a great deal of support and supervision. They will be unprepared to meet the challenges of giving good factual information, handling questions and maintaining an open and frank attitude.

Health Agencies

Parents and educators are not the only ones who have generally denied the sexuality of the blind. Public health agencies have been serving the retarded for a number of years now, but still do little for the blind. James Hauser of the Health Services Division of H.E.W. reports asking the Southeast and Midwest Planned Parenthood Regions if they were providing services to the blind in their clinics. Their response was one of surprise, interest, and chagrin because they had never taken this handicapped individual and/or potential patient into serious consideration.

National Agencies

National agencies serving the handicapped, such as Recording for the Blind, Library of Congress and the American Printing House for the Blind, have only recently begun to include in their available materials such items as *The Sensuous Woman*, *Sex Before Twenty: New Answers For Youth* and *Fundamentals of Human Sexuality*. Recently I picked out thirty-two relevant books that are now available on tape, record, and in braille. I was selective in my choices, so we now have a pretty good beginning, but we need a great many more. George Gore of Michigan State University has compiled a very good bibliography for those interested in helping exceptional children and adults with their quest for sexual equality. Also, I must refer you to Part III of *Sex Education and Family Life for Visually Handicapped Children and Youth: A Resource Guide*, published in 1975 by S.I.E.C.U.S. and A.F.B. Pages 51-86 are full of selected materials for the professional and client who is seeking information about sexuality. The Center on Human Policy at Syracuse University has programs promoting services to parents and professionals who work with handicapped children. The Public Affairs Committee of New York publishes an ongoing series of pamphlets pertaining to social and economic problems, many of which revolve around family life problems, some specifically with the handicapped. Included is a useful bibliography for parents, professionals, and young people.

Touching

Every society seems to have certain unspoken rules about touching and closeness. Within some, 2 persons may stand very close while talking and touching is permitted. Other societies maintain a certain distance and touching is not permitted. Within the American society, it is generally the latter that predominates. Touching is generally not permitted. This is an obstacle in teaching sexuality and self-image. Our clients have been taught that to touch another person is taboo, that touching is a sign of aggressive sexual behavior. How is the blind person to learn about other people without touching? Vogel and Muxen (1976) refer to a trust exercise called "milling," where the clients in a sexuality course were instructed to move about the room slowly until they came into contact with someone. They then were to form partnerships, exploring non-verbal communication, using only their hands. Most participants were embarrassed and found it hard to deal with tactile openness. In our sexuality group in San Jose, we tried pairing off couples -- disregarding sex -- and having them tactually explore one another's face which resulted in total disaster for the leaders. Touching another person was taboo, just as society taught them.

Davis (1969) considers the most significant problem for the congenitally blind child to be the child's concept of his own body image and his concept of the body image of the opposite sex. For children, society prohibits tactual observation of one's own or another's body.

Models

As educators, we know that in teaching concepts the real object gives the greatest conceptual information. An elephant isn't really an elephant until you have felt the rough texture of the skin, the wire-like bristles of hair or the trunk gently pulling at your hand for another peanut. THAT is an elephant. From that experience, we can transfer conceptual facts to a model which may give a more total picture of the entire structure of the animal and finally a verbal description that would attempt to bring together all one has learned about the structure of an elephant. If then, real objects, like the elephant, are the best in teaching about a particular subject, followed by, in descending order, models and verbal descriptions, should we not seriously consider the use of live models in sex education classes (Scholl, 1975). The problem is not whether live models would enhance the child's knowledge and understanding of the human body, but society's reaction that we, the educators, are getting vicarious thrills from this or are turning these poor little sexless blind children into sex maniacs or perverts.

Most of the models available through educational supply companies are made of a hard durable plastic and designed for the sighted child. Often included are arteries, veins, muscles, and a host of other items, all in vivid color and easily discerned by the eye but impossible to identify by touch. Elmer, as we liked to call the plastic torso, was lots of fun to pull apart and explore. Certainly, some factual information was gained as to size and location of body organs, but Elmer was sexless. No penis or vagina. The possibility was there, but the sexual organs had to be ordered separately. Later, upon seeing the sexual organs, I was just as glad that Elmer was as he/she/it was. If one were to close his eyes and, without knowing what he was handling, tactually explore the male sex organs that go with the torso, he would be hard-pressed to identify the object. If those of us with visual imagery are unable to make identification, how can we expect a congenitally blind child to do so?

It seems as though there is little to be delighted about when speaking about Sex Education/Human Sexuality for the visually handicapped. There are too many dilemmas to be solved before we can begin to focus on the delight of having provided handicapped individuals with whatever it takes, so that they may participate fully in our society. I have attempted to focus this paper on the dilemmas as I and others view them. As a brief review, the dilemmas are:

1. A society which, in general, denies the handicapped the opportunity of becoming socially, emotionally, and sexually mature individuals

2. Educators who are not meeting their obligation in fulfilling their client's or student's right to live fully

3. Parents and educators who are ignorant of many facts concerning sexuality and who are not yet comfortable with their own sexuality and the sexuality of others

4. Public health agencies that have never seriously considered the blind as possibly having sexual problems

5. The serious lack of appropriate materials for reading and listening

6. The serious lack of appropriate models, *developed for tactual* observation, and designed to aid in the development of self-image.

I hear a lot of talk about the need for improved sexuality guides or implementing programs that will truly meet the need, but talk is not enough. We must not procrastinate any longer with our plans to provide adequate sex education programs. Two years from now, when we gather together again for this Conference, I hope that we will be able to speak of success not failure; of sexual attitude changes in parents and teachers alike; of new materials being available; of blind youth going forth, walking a little taller, head held a little higher because within them is a new confidence of being or having a better chance of being a fully participating member of today's society. THAT WILL BE -- OUR DELIGHT.

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USING AN EXPERIENCE STORY APPROACH TO TEACH BEGINNING BRAILLE READING

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In teaching young children to read I found that some of the most enjoyable activities were the composition and use of experience stories. This paper is in part a testimonial to that pleasure. This approach never failed to motivate pupils, even those who had experienced failure in reading and had quite negative feelings about reading. It is a technique which builds in success. It built rapport with the students. Because my pupils spontaneously expressed pleasure with experience stories I, as the teacher, enjoyed them too. In addition to being a pleasure, it was an effective method to introduce braille reading.

Here are two examples of experience stories. One was written by a group of children, and the other by an individual child. As the name implies, each is a story about something the child or children have experienced.

Jack-O-Lantern

We had a pumpkin.
We cut two triangle eyes.
We cut one triangle nose.
We cut a smiling mouth.
We cut a hole in the top of his head.
Now we have a Jack-O-Lantern.

My Turtle

I have a turtle.
His name is Buster.
My turtle is little.
I feed my turtle.

Composing an experience story is a group activity. The teacher writes the story the children dictate, and then they read it together.

A kindergarten or first grade class might write such a story as this at the beginning of school:

> We go to school.
> Miss Morris is our teacher.

For an individual student this could be adapted:

> I go to school.
> Mrs. Beckham is my teacher.

I composed the following story for my first reading lesson with Carol who was repeating first grade:

> My name is Carol.
> I go to Claiborne School.

I could see a change in attitude from negative feelings about school, reading, the resource room, and the new teacher, to positive ones, just during this one lesson. Her verbal and non-verbal communication conveyed, "It all might not be so bad, if I read about myself." Experience stories are an effective way to communicate to a child, "You are important -- I am interested in you."

Using experience stories to introduce beginning reading has advantages for students who read print or braille. Probably the biggest advantage is that the child is reading about the most important thing in the world -- himself. This factor gives the pupil high motivation to read. Experience stories teach that reading conveys meaning, which is basic to the entire concept of acquiring reading as a skill. Talking about an experience is a very direct way of demonstrating meaning. Putting the experience in written form is one step up symbolically in conveying meaning. Using experience stories, since they are based on direct experience and therefore concrete meaning, the leap to written symbols as conveyors of meaning is minimized. Granted, when used prior to a decoding approach, memory will have to serve as the basis for the oral response to the written symbol. Not only does this approach admittedly use memory, but it actually capitalizes on memory as a useful tool until the child has developed some reading skills. It allows the child to read before he has developed some reading ability. Experience stories can sell a child on reading. For this reason it can be used with a child who has had failure experiences with reading. In a group setting it is good for building incidental reading vocabulary with better students. The availability of written stories using his speaking vocabulary which he has memorized provides something upon which to grow.

An experience story approach to reading is especially good for working on some problems peculiar to braille reading. Braille is perceived when the hands are moving rather than stationary on the symbol. Experience stories give the pupil a chance to learn the mechanics of the movement required in braille reading before he is required to make detailed perceptions. Some of the concepts that are taught are listed. The pupil learns that one starts reading at the top of the page and moves from left to right. He learns how to go to a new line of braille. Perhaps most important, the pupil learns the position of his hands for braille reading and how to move his hands while he is reading.

The major disadvantage of using experience stories to teach reading is that there is not a controlled vocabulary. Most commercially produced beginning reading materials use a vocabulary controlled by the principles underlying their development. In addition to a carefully planned sequence for introducing words, words are also repeated frequently when they are new. Because experience stories are based on the variety of actual experiences of children and their speaking vocabulary, these kinds of control are not possible. For students reading braille there is the additional disadvantage that the introduction of braille contractions is not controlled. Some ways to incorporate slight vocabulary control will be described.

I have used experience stories as reading readiness, as an introduction to reading, and as a supplement to a basal reader. Most writers use experience stories as a total approach to teaching reading. Therefore, my approach to composing experience stories differs from the usual one, in that I guided the child's composition in several ways to increase the usefulness in beginning reading. I got the child to use words and phrases that would lead into his basal reader. I have not found this teacher direction, some might call it interference, to diminish the child's motivation or enjoyment of the stories. In strict adherence to the principles of composing experience stories the child dictates the story and the teacher writes exactly what the child says. I guided the child's composition by suggesting a topic or by asking questions.

Topics for experience stories may come from several sources. We wrote about experiences the children had enjoyed: The class Christmas play, a child's birthday party, a fishing trip, or a class activity or field trip. I have written about activities which I had planned for instruction such as, learning the way around the school, learning to hop or skip, going to a grocery store, or making lemonade. Sometimes, I would devise experiences which could be used as a basis for writing stories. When I have wanted to use the phrase "up and down" we might have gone up and down the stairs. Another day we might have gone to a hill where we would walk up and down, run up and down, skip up and roll down. After the activity I would say, "Let's write a story about 'such-and-such'." I made it a point to know the child well. We wrote about what interested him: Pets, family members, himself, school activities, or special interests or hobbies. All of these were subjects for experience stories.

I asked questions which led the child to use words and phrases that provided some vocabulary control. "What happened next?" "Did something happen before that?" To help me lead the pupil I would think of some sentences that would incorporate the words or phrases desired. "Was it a big ball or a little ball?" "Could we say, 'I have a little ball'?" Another time I might have asked, "Was the candy good?" "How about saying, 'It was good candy'?" In these cases I expanded the sentence to use words that would be taught soon in his reading books.

Repeating words and phrases facilitates learning. The title can provide repetition:

My Ball

I have a ball.
My ball is little.

This story written by a first grader repeats words in an upcoming story in his reader:

What I Can Do

I can walk.
I can run.
I can hop.
I can jump.

Two teenagers who had not learned to read wrote this story after I taught them to make lemonade:

Lemonade

We made lemonade.
We put ice in it.
We put sugar in it.
We put lemon juice in it.
We put lemon pieces in it.
We put water in it.
We stirred and stirred and stirred.
It was good lemonade.

The word "we" is used often as are the phrases "we put" and "in it." "We stirred and stirred and stirred," provides another form of repetition.

I used words that had been in previous stories or would soon be used in the child's reader, allowing the experience stories to lead into the specific reading books from which the child would receive instruction.

For a group that includes sighted children, compose the story at the chalkboard. For an individual, write with pencil on paper. This allows you to add new sentences or words if the storytelling is not in correct sequence. Read each sentence aloud as it is written, so that the child can verify it. Then read the complete story for the child's approval. Compose the title last as a technique to teach the concept of a main idea. Transcribe the story into braille immediately so that the child can read it right away. Read it and reread it several times before it is put away, and read it many times later as well.

In transcribing the story into braille, use heavyweight braille paper. These stories will be read many times by hands that press hard. Use grade 2 braille and complete punctuation. Center the title at the top of the page. Begin each sentence on the left margin; ideally, each sentence should be on one line. Lines are double spaced and double spaces may be left between words as well. Each story is on a separate page, although it doesn't fill the page. Beginning readers are impressed with how many pages they have read, whether they are full pages or not.

When teaching the child to read the story, sit opposite him and gently hold his hands in the proper position to read braille. The desk should be low -- just above the pupil's knees. The story needs to be secured in place. It may be pinned to a pin board with a push pin, taped to the desk with masking tape, or put in a looseleaf notebook. Give a verbal description of how to read while moving the child's hands. Say, "The name of the story is at the top of the page," while moving his hands to feel the top edge of the paper and then down to the title. Move his hands across the title as you read it. Then move his hands back to the beginning. Say, "Now you read it with me," repeating the movement. Continue, "Let's read it again," again repeating the movement. Move his hands down to the first line of the story as you say, "Now we go down to find the beginning of the story." Move his hands to the left side saying, "We start reading here." The first time you read the sentence as you move his hands across the line, keep his hands on each word as you say it. At the end of the line, say, "Now you ride this train track back to the beginning," moving his hands back. Repeat as with the title. After 2-4 readings of the first line, move the hands back and then down to the next line. Going back on the line just read and down to the next line is important because beginning reading materials tend to have lines of variable length since each sentence starts on a new line. The child can learn to use the diagonal movement from one line to the next when he is reading materials that consistently go to the right margin.

Each sentence is read and reread as described above. When the whole story has been read in the above manner, read the complete story from title to finish again without any repetitions.

The first time an experience story is read, guide the child's hands throughout the lesson. Continue to guide his hands in the next few lessons. As you feel his hands initiating movement, allow his hands to move yours, being ready to take the lead when he needs it. In subsequent lessons fade out your physical support, continuing verbal descriptions. Fading out support may take the form of asking questions. "Where do we start?" "Now show me how you find the next line."

Experience stories go far beyond the original lesson. Children enjoy reading the stories time and time again. A looseleaf notebook can be used for each child's stories with a title such as "A Book About Bobby" or "Bobby's Book." Covering the book with corduroy or some other textured fabric makes it more attractive.

Each child's book should be tactually different. When page numbers in reading books are to be introduced, page numbers can be added to the stories. To increase the reading of the stories the child and the teacher may alternate choosing which story to read.

These rereadings are heavily based on memory. However, with advancing lessons you can ask for more and more detailed perceptions. At first ask the child to find the title, the first line or the last line. Then ask him to find a long line or a short line and read it. Then he may find his name or the word "I." Show him a word or a phrase such as "up and down" and ask him to find it somewhere else in the story. Look for words that have been used in many stories, perhaps turning from page to page to find them. Ask him if he can find a specific story, giving the title. Have him look for the longest story and the shortest.

Duplicate copies of the stories can be made and used in various ways. One copy can be cut into strips with a sentence on each strip. Give the child a strip and ask him to find the same sentence in his story. The child can paste the strips on a blank paper in the right order or put them in a small pocket chart. He can carry out these activities before he can actually read by using such cues as the long line, the short line, the line with the long word, or matching the first word in the sentence.

I have used experience stories to introduce reading, before the child has a book to read. However, the stories were not discarded when he got a book. I continued to use them from time to time requiring greater recognition of words he had learned in his reading lessons. Second graders enjoy reading about themselves, also. Use of experience stories can be continued on an occasional basis until the child can write his own stories with the teacher to help him get all the contractions.

This is a report of my personal use of an experience story approach to beginning braille reading. I have made adaptations on standard procedures to meet the needs of the children I have taught. It is an approach which is especially suited to blind students because it encourages the movement essential to braille reading. I present it with the proposition that the teacher can enjoy teaching and the student can enjoy learning while at the same time implementing successful reading instruction.

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THE TEACHING OF BRAILLE READING: PAST, PRESENT, AND FUTURE

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The major emphasis of this paper will be discussion of the teaching of braille reading as it was practiced in the past, as it is now taught, and as many believe that it should be taught in the future. To as great a degree as possible, conclusions will be based on research findings. However, since very little research related to the teaching of braille reading exists, some reliance must be placed on the opinions and practices of the educators of visually handicapped children who now teach reading.

A very brief and succinct preview of this discussion might be as follows:

> The past methods in the teaching of braille reading were basically the same as those used in the teaching of print reading. The materials were simply direct translations of print materials into braille, and teachers were, in general, forced to use teaching methods designed for use with print materials.
>
> Present methods in the teaching of braille reading are still, to a great extent, those used in the teaching of print reading for the same reasons as those cited above. However, there is a beginning movement toward the provision of materials designed specifically for braille readers, adapting teaching methods to suit the unique needs of students who read braille.
>
> As a result of these trends, hopefully, braille teaching methods and materials in the future will be designed with the braille reader in mind and with consideration of the medium he will use to learn to read -- braille.

The remainder of this paper will be an elaboration of the statements made regarding these three eras in the teaching of braille reading.

Teaching Braille Reading in the Past

If one looks to the very early history of braille reading, it is quickly apparent that the major emphasis was on the code itself. Irwin (1955) discusses the "War of the Dots" in which great controversy existed over the use of Moon Type, Boston Line Type, New York Point, English Braille, or American Braille. This controversy was finally resolved and the latest version of the braille code is *English Braille American Edition, Revised, 1972,* published by the American Printing House for the Blind.

Another controversy concerned the use of grade 1 braille, grade 1-1/2 braille, or grade 2 braille. Grade 1 braille is fully spelled out and consists of the alphabet letters, numbers and composition signs. Grade 1-1/2 braille consists of all the characters of grade 1 plus a limited number of contractions. Grade 2 braille contains 263 elements or meanings assigned to the 63 characters of the braille code. The general practice in the past was to begin the teaching of braille reading with grade 1 braille, then go to grade 1-1/2, and finally introduce grade 2 braille. The controversy was caused primarily by the fact that many educators believed that grade 2 braille should be introduced from the beginning of instruction. After much discussion and disagreement, it was finally concluded that students learned to read as easily when grade 2 braille was used in beginning instruction and, thus, the controversy was settled. Hooper (1946) presents one of the most convincing arguments in relation to this controversy although there are other related articles too numerous to mention.

Additional research related to perceptual factors in braille received a great deal of attention in the past. Burklen's (1932) *Touch Reading of the Blind* is well known. Research on reading speeds such as those by Hayes (1918, 1920), Neday (1939), and Lowenfeld (1945), and studies on braille spacing (Meyers, Ethington, & Ashcroft, 1958) and on reading speeds for grade 2 braille (Foulke, 1962; Nolan, 1963) were available. However, even though the information in these studies was valuable to teachers and developers of materials, research on the teaching of braille reading was not available. The only early work in this area was Maxfield's (1928) book entitled *The Blind Child and his Reading.* This was a valuable sourcebook for teachers at that time, but since it was completed at a time when grade 1-1/2 braille was being used, it is not particularly relevant to present methods of teaching. The book does indicate that the "whole-word" approach was in use at that time, and that Maxfield advocated a "learning by doing," or an experiential approach to teaching reading.

Teaching Braille Reading in the Present

The only relatively recent work on the teaching of braille reading is the report of the Lowenfeld, Abel, and Hatlen (1969) study in *Blind Children Learn to Read.* They report that the method still in most general use is the "whole-word" method and that the majority of materials used in teaching braille reading are print materials which have been transcribed into braille.

Fortunately, however, a number of new trends are appearing. Some recent developments do indicate that closer attention is being given to the problems of the braille reader and that an effort is being made to provide both methods and materials which are more suitable for these students.

Since 1970, the Department of Educational Research at the American Printing House for the Blind has been involved in a strong effort to provide materials in reading readiness and beginning braille reading which are based on the needs of the braille reader, needs identified by educators and through research. Since 1974, four sets of materials have been produced which attempt to overcome problems created by the use of print materials transcribed into braille and to provide materials which are designed specifically for the braille reader. Some of the materials were developed by teachers who were not content to use the inadequate materials available; others were developed from research findings. These materials include: *Tactual Aids for Reading* (Caton, 1974), *A Tactual Road To Reading* (Kurzhals & Caton, 1975), *Tactual Discrimination Worksheets* (Caton, Pester, & Hurko, 1975), and *My Fingers Do Good Work* (Wegehoft, 1976).

Tactual Aids for Reading consists of a collection of objects and a teacher's manual designed to supplement print reading texts which have been transcribed into braille. The purpose of the objects is to assist in giving meaning to stories which rely heavily on pictures for meaning and to provide practice in tactual discrimination.

A Tactual Road to Reading is a complete reading readiness program in which the basic philosophy is provision of background experiences which enable a child to read with meaning and comprehension. It includes lesson plans and the children's books to accomplish this purpose and also prepares the student to use the print texts which have been transcribed into braille.

Tactual Discrimination Worksheets provide training in tactual discrimination skills which are considered important in helping students interpret the various tactual representations they are required to use throughout their educational careers. The worksheets consist of geometric forms, lines, angular figures, and braille code characters and are ordered according to their difficulty as established by extensive field testing.

My Fingers Do Good Work is a set of beginning braille drill materials which, again, are designed to prepare students to use directly transcribed print materials. Drill books for students and a manual for the teacher provide interesting and motivational activities.

Teaching Braille Reading in the Future

It appears that methods and materials for the teaching of braille reading in the future will be directed toward the braille reading child himself and toward the problems he encounters in use of his particular reading medium. One major example of this trend is a research project underway at the American Printing House for the Blind. This project will result in the development of a Beginning Braille Reading Series which will take into account the difficulties of the braille code, problems in tactile perception, and problems in concept development, which are unique to the visually handicapped child. The proposed series will consist of readers from pre-primer through third grade, workbooks to accompany them, and teachers' manuals.

The concept of such a series is, of course, not new. Ashcroft, in 1960, identified categories of the braille code and ordered them according to their difficulty. He also identified the kinds of errors students made in using the braille code and made specific suggestions for overcoming these problems. Henderson (1967) also identified types of errors in braille word recognition and concluded that drill on specific problems improved braille reading. Umsted (1970) came to the same conclusion in working with high school students. Bleiberg (1970) surveyed teachers who expressed a need for such materials, and Rex (1970) analyzed braille readers which had been directly transcribed from print and graphically demonstrated the many problems for braille reading students in these textbooks. Nolan and Kederis (1969) in *Perceptual Factors in Braille Word Recognition* have presented evidence from a number of studies that many of the perceptual factors which are present in the braille code affect braille word recognition. Their findings are contrary to many practices which are common to both the past and present methods of teaching braille reading. Unfortunately, these findings were not put into practice in the past nor are they being considered in the present. They will be used to a great extent in the Beginning Braille Reading Series, however.

In addition to the research evidence mentioned above, many educators of visually handicapped children requested a specially designed series for braille reading. Therefore, the development of the Beginning Braille Reading Series was initiated in September 1975. The first year of development consisted of the writing of a detailed set of specifications for the series. These specifications are based on all available research in braille reading, tactile perception, concept development in visually handicapped children, and research in general reading. Basically, the general plan will be to use information related to the order of difficulty of categories of the braille code established by Ashcroft (1960); the orders of difficulty of individual characters in the braille code established by Kederis (1962), Henderson (1967), and Bloomer (n.d.); the types of errors common in braille reading identified by Ashcroft (1960) and Henderson (1967); and information related to word length, dot spacing and distribution, number of dots, etc., reported in *Perceptual Factors in Braille Word Recognition* (Nolan & Kederis, 1969) in the selection and order for the vocabulary to be used in the series. In addition, information related to tactile perception will be used in the designing of formats for the readers and workbooks, and information related to concept development will be used in selecting appropriate topics for stories as well as for selecting activities to be included in the teachers' manuals.

It is anticipated that the Beginning Braille Reading Series can be used in both residential and public school programs. Some problems could occur in public school programs, but since the special teacher of the visually handicapped is usually primarily responsible for teaching beginning reading in these programs, the problems should not be serious. The fact that such a series will enable students who must use braille as their reading medium to learn to read without the overwhelming problems they have encountered in the past should outweigh other considerations.

The series should be especially useful to children who have had severe problems in learning to read. It will be paced and sequenced so that these students can progress at a pace appropriate to them. Students without specific problems should progress through the series at a faster rate and be ready for transition into directly transcribed print readers with better reading skills than they have had in the past.

Summary

A review of the past and present methods of teaching braille reading and the materials used for this purpose reveals that, until recently, the methods used were basically the same as those used for children who read print. This state of affairs resulted from the fact that the materials available for teaching reading were print materials transcribed into braille. In recent years, however, materials have been developed which attend to the special problems of the braille reader and which have a direct bearing on teaching methods for these children. The future direction in the teaching of braille reading may be that of providing beginning reading materials based on the difficulties of the braille code and the special problems of the braille reader. These methods and materials should better prepare the braille reader to use materials transcribed from print since they will provide him with the necessary background and skills.

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TACTUAL SKILLS IN READING EMBOSSED DISPLAYS

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Teachers have always found that tactile maps present a series of problems to the blind student. Teachers report (Berlá & Butterfield, 1976) that blind students lack the conceptual and experiential prerequisites to map reading, they lack map reading skills, and the maps available to them are of extremely poor quality. Although I am going to talk about map reading skills, I would like to emphasize one critically important point first. Experienced teachers report that the single most difficult problem for a blind student is associating a map with reality, i.e., that a map represents a real environment. A solution to this problem is only going to be accomplished if the blind child is fully oriented and familiarized with his immediate environment. Then the first map the child should be introduced to is one depicting a part of his personal environment. The map should be small and of simple design representing only those things which are significant to the child and with which he has had concrete hands-on experience such as his room, classroom, or playground. The initial "map" might take the form of a model using toy furniture which could be gradually substituted for point, areal, and linear symbols. If this initial step is omitted or glossed over, no amount of training in map reading skills is going to help a blind student understand what a particular map is depicting.

Once the child has reached the stage where he can read maps there are a number of problems he will be faced with and there are a number of specific concepts and skills he must have in order to facilitate his map reading task. One necessary skill in reading a map is to be able to scan systematically the map in order to cover the map completely, in detail, and in some logical sequence. One survey (Berlá, 1972) reported that blind adult map readers use a variety of systematic scanning patterns when they read maps. The exact form of the scanning pattern may be unimportant; however, some studies (Berlá, 1973; Berlá & Murr, 1974) have shown that training students to scan a map in an up and down vertical pattern was effective in having them cover the map in a systematic pattern that insured complete coverage. The vertical search pattern was superior to horizontal or left-to-right reading patterns because it reduced or eliminated veering and skipping of parts of the map. In any event, teaching a child a vertical search pattern may be an effective way of introducing him to the idea of being systematic and complete in scanning and reading tactile displays. Subsequently, he might develop a variety of scanning patterns which would depend upon his own needs, the nature of the task, and the content of the map. The important point is the need of the tactual map reader to be *systematic* and *complete.*

I would now like to focus on a series of studies which I conducted to determine the behavioral skills or lack of skills students employ in reading raised line political maps (Berlá, Butterfield, & Murr, in press; Berlá & Butterfield, 1976). The basic tasks in all these studies were for the student to recognize or locate the shapes of U.S. states and foreign countries and to trace their outlines. Each student was presented with a cue card which showed a raised line shape which he felt. He was then asked to find the identical shape on a 10 x 12 inch raised line political outline map. The cue card remained alongside the map for reference during a five-minute search period. Thirty-six students from grades four through 12 were tested and their performance was video-taped along with a written record of the number of shapes located and the amount of time required to locate a particular shape. Based on the accuracy and time scores the nine best and the nine poorest map readers were selected and their videotapes were viewed by two persons who classified and categorized their map reading behaviors. In essence we obtained a list of behaviors or skills that good and poor tactile map readers engaged in while attempting to locate a shape on a map.

Prior to locating a specific shape on the map, the students were given 2 minutes of free exploration. In searching the map, the behavior of both good and poor map readers could be characterized as a two-handed, rapid, incomplete, and unsystematic inspection of the map with the fingertips. Both good and poor readers appeared to perceive the map as a series of interconnected lines rather than a composite of juxtaposed shapes. Consequently it was doubtful if any of the readers obtained any useful information from a preliminary search of the map. However, in inspecting the cue cards there were a number of significant differences between the good and poor map readers. All of the good readers traced the shape on the cue card completely. They typically picked out a point of origin and traced around the shape in a continuous motion and returned to the point of origin. Poor readers manifested this behavior significantly less often (61% of the time) and typically skipped around the shape in a haphazard manner feeling different parts without tracing the edge of the shape in one continuous motion. When inspecting a shape, good readers appeared to conduct a distinctive features analysis which consisted of a search for the salient features of a shape (parts of the shape which "stuck out," "pointed," "curved," or were "rough"). On locating a distinctive feature a good reader would perseverate on it for several seconds and then move around the edge of a shape until he found another distinctive feature. He would continue to do this until he had traced the shape completely.

In searching the map for a particular shape which was shown on the cue card, there were two major differences between poor map readers and good map readers. Poor readers had substantial difficulty when tracing lines. They typically would fall off the line they were tracing and have difficulty finding the same line. In addition, poor readers often followed lines that intersected with the line of the shape they were tracing and consequently would become disoriented and "lose the shape" they were tracing. Good map readers manifested this problem substantially and significantly less often.

In searching for a particular shape on the map, the good map readers located the target shape by picking out one or more distinctive features of the shape on the map. Once a distinctive feature had been located, it would signal the student to stop and trace the contour of the shape. Poor map readers used this distinctive features location strategy substantially less often and in some instances appeared to be looking for a shape on the basis of its general configuration and/or size.

The next question was what the effects training in line tracing and distinctive features analysis would have on shape recognition and the location of shapes on a tactile map. Two studies were subsequently directed toward this question. In both studies students were pre-tested on shape discrimination and locating shapes on political outline maps. On the basis of the pre-test scores students were matched in pairs and randomly assigned to either a trained or untrained condition. In the first study, training in distinctive features analysis significantly improved the shape recognition performance of a group of 25 students from primary through fifth grade by 32% as compared to 25 untrained students in the same grades. A second study training resulted in a 25% increase in the number of shapes located on a map and a 41% decrease in the average time to locate a shape on a tactile map. A significant aspect of this research is the fact that the total training time per student was 90 minutes spread over 3 consecutive days. From a subjective standpoint I have found that students readily take to the task and, once they understand the nature of distinctive features analysis, find it effective, and it becomes a successful learning experience. If nothing else, these studies demonstrate that students lack certain specific skills, and substantial improvement can be made when systematic instruction is provided.

Where do we stand with maps for the blind? My personal analysis of the situation is this. We have known for several years now what kinds of symbols are discriminable and recognizable by young blind students. However, very little of this symbology, to the best of my knowledge, has been incorporated into individual maps appearing in textbooks or atlases. To make matters worse, the maps that now exist are not only poor in quality, but in some instances the maps were outdated 20 or more years ago. Furthermore, I have personally met with many highly motivated teachers who have designed and collected their own maps over the years using spaghetti, string, and any other useful junk they can get their hands on. It seems that in our age of sophisticated technology the classroom teacher still must resort to trial and error because there is a lack of equipment to help them. Many teachers have asked if someone could not design a map and diagram kit that would not only incorporate the discriminable symbology, so they could make good maps, but also instruction books on how to design maps and the specific concepts and skills to be taught. I think a primary goal should be to provide the means for teachers to improve what has become a stagnant situation. The stagnation is epitomized by an unsolicited letter I recently received from a blind geographer who spent one year investigating maps available to blind students. His conclusion was that "maps available to the blind today do not permit learning as much about the earth or even the moon as did the maps available to the sighted in the 15th century."

Secondly, I think that map and diagram reading must become a specific objective in a school's curriculum. In spite of the fact that there are a significant number of maps and diagrams in braille textbooks, very little training is given to students in reading and interpreting them. A useful place to begin would be in reading readiness and braille reading programs. Another important and possibly the most logical context for map reading would be in pre-cane mobility training, where maps of a student's environment can be used to show the structure of space.

Thirdly, there is technology available that can dramatically improve the quality and quantity of maps available to blind persons.

In essence we know what the problems are and we have enough information available substantially to improve, if a concerted effort is made.

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TACTILE RELIEF MAPS FOR THE BLIND: PAST, PRESENT, FUTURE

Lawrence H. Butterfield, Jr.

American Printing House for the Blind
Louisville, Kentucky

Past

Tactile maps for the blind have never been available to a large percentage of the blind population. Production and sale of tactile maps for the blind have not been competitive nor commercially profitable; therefore, a relatively small number of organizations developed the technology to produce tactile maps. Studies reported that the tactile maps produced were difficult to read, and students were found to lack the basic skills to read them (Berlá, 1973; Berlá, Butterfield, & Murr, in press; Berlá & Murr, 1974, 1975; Nolan & Morris, 1971; Wiedel & Grooves, 1969). For example, Wiedel and Grooves (1969) reported that 72% of a sample of 376 visually impaired students received little or no training in map reading. Since tactile maps represented the largest category of embossed graphic displays in one series of braille textbooks (Arampatta, 1970), blind individuals have been deprived of knowledge and insight about spatial characteristics of the world they live in.

Blind men had achieved prominence as teachers and writers before the birth of Christ, but none of these early teachers or writers left any recorded evidence of the tangible apparatus they used. The first record of a piece of tangible apparatus being used by the blind appears in the 4th century. It was not until the 1770s that Weissenburg appears to have been the first blind man to want maps (Ritter, 1962). He used embossed paper maps but with little success. Globes and maps were engraved in copper and pressed in cardboard in the middle of the 19th century. Detail was said to have been excellent, but all the original plates have been lost. Plates for printing embossed paper relief maps had been almost universally accepted in Europe by the 1880s.

In the United States Howe Memorial Press, Illinois Braille and Sight-Saving School, American Printing House for the Blind, and Dennoyer-Geppert Company have been the largest producers of maps for the blind. Braille maps produced by Howe Press and Illinois School have been extremely popular in schools. The American Printing House has produced embossed paper and hand-carved wooden maps for distribution.

Although no longer actively involved in producing maps and models for the blind, Dennoyer-Geppert Company of Chicago did at one time supply these materials to the blind. In the last 30 years technological advances have made it possible for rubber and plastic to be used in constructing maps. For instance, no longer are craftsmen painstakingly hand-carving wooden relief maps. Today rubber and plastic molds provide a rapid and inexpensive means of reproducing relief maps for the blind.

Present

Four basic types of maps are available to the blind today. They are embossed paper maps, dissected relief maps of plastic or rubber, molded paper or plastic maps, and handmade, special maps. Technological advances are being made in the area of map making materials, but the progress is slow. For example, computer-generated tactual symbol reproduction is a reality, but rarely is the symbology used on maps. Other technological advances are promising, but they are in the developmental stages, i.e., polyurethane maps.

Many problems confront the tactile map producer, regardless of the material used. Research on tactual perception as it relates to maps for the blind, rather than solving the problems the blind have in using maps, serves to indicate the great range of work yet to be done. Research on tactual symbology has not produced enough discriminable symbols for standardization (Heath, 1958; Nolan & Morris, 1971; Gill & James, 1973). In spite of the fact that series of discriminable symbols have been identified, teachers report that these symbols are rarely used (Berlá & Butterfield, 1975). More research is needed on tactual symbology, and present findings need better dissemination.

Map makers rely on visual judgments while constructing maps. But visual judgment about the design of tactile displays is restricted during the transition of maps from visual to tactual representations. A natural bias develops in sighted map makers who underestimate the limitations of touch in comparison to vision. Many symbols that are visually different cannot be discriminated tactually. Most tactile maps are adaptations of maps that were developed for visual usage. Instead of designing a map to be tactual, maps designed for visual usage are made tactual.

Teachers avoid teaching map reading to blind students because the quality of tactile maps is poor. In addition, many tactile maps are so large and expensive that distribution of these maps is almost entirely restricted to classroom use. Therefore, many blind adults are unaware of tactile maps unless they have been exposed to them in school. Since the blind do not develop a special ability to perform kinesthetic tasks (Rivens & Cordellas, 1970) and tactual texture discrimination is stabilizing at the third grade (Gliner, 1966), a map reading program could be presented to the blind at an early age. Unfortunately, the classroom teacher has little time to search the literature for articles about tactile perception, use this information in constructing maps, and use these maps to teach map reading to her students.

Future

The relative disadvantage of touch in comparison to vision is a known fact. Tactile displays are difficult to read but not impossible. No longer can we be foolish enough to think that tactual two-dimensional displays can replace three-dimensional pictures. But tactual perception is a means of communication for the blind and should not be overlooked. Tactual maps for the blind must be designed tactually -- not as tactual representations of maps designed for visual usage. Active participation of cartographers, psychologists, and teachers of the visually impaired in research and design of tactile maps for the blind would, hopefully, solve some of the problems involved in graphic communication.

Research and development in symbol legibility, map design, and map reading techniques are major areas where study is needed. Braille research has provided information about point symbols, but the research in other areas related to tactual maps is sparse. In addition, the research information that is available should be drawn together into a comprehensive program. Teachers' lack of knowledge about tactual maps is partly responsible for the limited use of tactual maps for the blind. Teacher training programs rarely provide teachers with the skills required to teach blind students map reading techniques. Without proper training, without research information about graphics, and without good materials, it is rather unfair to accuse teachers of failing to provide adequate map reading skills to their students.

Educators of the blind are familiar with the problems mobility presents to the blind. Blind individuals are restricted in their ability to expose themselves to their environment from infancy. While the blind child is young he leaves his environment only with others, never developing independence in mobility. Maps could provide the early experiences blind children need to develop a degree of independence. While the use of maps would increase the mobility skills of the blind, it would also reduce their dependence upon sighted aid. Independent mobility could reduce the psychological effects of being dependent on sight aid and information. Maps could provide the impetus for blind children to develop mobility skills that would make them a more independent part of the society in which they live.

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Association for Education
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ASSOCIATION FOR EDUCATION OF THE VISUALLY HANDICAPPED

Since 1853, only about twenty years after the first schools for blind children had been established in the United States, the Association for Education of the Visually Handicapped has been the professional association of educators of children whose educational programs required some adjustment because of their visual limitations. Over those years, the Association has naturally mirrored the nature of education offered to blind children. It was first known as Instructors of the Blind, then for many years as American Association of Instructors of the Blind. For most of those years its membership was made up chiefly of staff of residential schools because it was in such schools that blind children were usually educated.

However, in recent years special educational opportunities have been offered not only to the "blind" but to many children with varying degrees of useful vision, and that education has increasingly been in the public day school setting. With these changes the term "visually handicapped" seemed more accurate and more generally acceptable than the term, "blind." To accommodate to this, the name of the Association was changed in 1968 to Association for Education of the Visually Handicapped.

As specialization developed in the field, the Association adjusted by building its program around workshops which could reflect the many special interest areas, which could provide for small group discussion and solution of problems, and within which framework people with common interests could work together throughout the biennium as well as at biennial conferences. Student chapters, state and local chapters, and the regional organization adopted in 1974, all represent ways in which AEVH seeks to bring the Association closer to each member and to unite educators with common, and sometimes geographically specific, concerns.

AEVH also serves through publication of a professional journal, *Education of the Visually Handicapped*, a bulletin called *Fountainhead*, and a volume of selected papers from each biennial conference. The organization participates actively in teacher and paraprofessional certification, in development of standards

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for the field, in training institutes, and in the encouragement and report of research. AEVH is affiliated with the Council for Exceptional Children, a department of the National Education Association; through cooperation with other national and international bodies the Association represents concern for visually handicapped children on many fronts. Each year, the popular AEVH brochure on education of the visually handicapped as a career is sent to many guidance counselors and young people who seek information relevant to their own choice of a profession.

For further information, write AEVH Executive Secretary, 919 Walnut Street, 4th Floor, Philadelphia, Pennsylvania 19107.

MEETINGS

The following is a list of the conventions of the American Instructors of the Blind (1853-1871), the American Association of Instructors of the Blind (1872-1968), and the Association for Education of the Visually Handicapped (1968-1978):

1st Meeting: August 16-18, 1853, at New York, New York
2nd Meeting: August 8-10, 1871, at Indianapolis, Indiana
3rd Meeting: August 20-22, 1872, at Boston, Massachusetts
*4th Meeting: August 18-20, 1874, at Batavia, New York
5th Meeting: August 15-17, 1876, at Philadelphia, Pennsylvania
6th Meeting: August 21-23, 1878, at Columbus, Ohio
7th Meeting: August 17-19, 1880, at Louisville, Kentucky
8th Meeting: August 15-17, 1882, at Janesville, Wisconsin
9th Meeting: August 19-21, 1884, at St. Louis, Missouri
10th Meeting: July 6-8, 1886, at New York, New York
11th Meeting: July 10-12, 1888, at Baltimore, Maryland
12th Meeting: July 15-17, 1890, at Jacksonville, Illinois
13th Meeting: July 5-7, 1892, at Brantford, Ontario, Canada
14th Meeting: July 17-19, 1894, at Chautauqua, New York
15th Meeting: July 14-16, 1896, at Pittsburgh, Pennsylvania
*16th Meeting: July 12-14, 1898, at Lansing, Michigan
17th Meeting: July 9-11, 1902, at Raleigh, North Carolina
*18th Meeting: July 20-22, 1904, at St. Louis, Missouri
*19th Meeting: August 21-23, 1906, at Portland, Oregon, at Salem, Oregon, and at Vancouver, Washington
*20th Meeting: July 14-16, 1908, at Indianapolis, Indiana
*21st Meeting: June 28-July 1, 1910, at Little Rock, Arkansas
*22nd Meeting: June 25-28, 1912, at Pittsburgh, Pennsylvania
*23rd Meeting: June 28-30, 1915, at Berkeley, California

*24th Meeting: June 4-7, 1916, at Halifax, Nova Scotia, Canada
25th Meeting: June 24-28, 1918, at Colorado Springs, Colorado
26th Meeting: June 21-25, 1920, at Overlea, Maryland
27th Meeting: June 27-30, 1922, at Austin, Texas
*28th Meeting: June 23-27, 1924, at Watertown, Massachusetts
*29th Meeting: June 21-25, 1926, at Nashville, Tennessee
*30th Meeting: June 25-29, 1928, at Faribault, Minnesota
*31st Meeting: June 23-27, 1930, at Vancouver, Washington
*32nd Meeting: June 27-July 1, 1932, at New York, New York
*33rd Meeting: June 25-28, 1934, at St. Louis, Missouri
34th Meeting: June 22-25, 1936, at Raleigh, North Carolina
*35th Meeting: June 27-30, 1938, at Lansing, Michigan
*36th Meeting: June 24-28, 1940, at Pittsburgh, Pennsylvania
*37th Meeting: June 26-30, 1944, at Little Rock, Arkansas
38th Meeting: June 24-28, 1946, at Watertown, Massachusetts
*39th Meeting: June 21-25, 1948, at Austin, Texas
*40th Meeting: June 26-30, 1950, at Philadelphia, Pennsylvania
*41st Meeting: June 29-July 3, 1952, at Louisville, Kentucky
42nd Meeting: June 27-July 1, 1954, at Batavia, New York
43rd Meeting: June 24-28, 1956, at Worthington, Columbus, Ohio
44th Meeting: June 22-26, 1958, at Vancouver, Washington
*45th Meeting: June 26-30, 1960, at Donelson, Tennessee
*46th Meeting: June 28-July 2, 1962, at Miami Beach, Florida
*47th Meeting: June 21-25, 1964, at Watertown, Massachusetts
*48th Meeting: June 26-30, 1966, at Salt Lake City, Utah
*49th Meeting: June 23-27, 1968, at Toronto, Ontario, Canada
*50th Meeting: June 28-July 2, 1970, at New Orleans, Louisiana
*51st Meeting: June 25-29, 1972, at Miami Beach, Florida
*52nd Meeting: June 23-27, 1974, at San Francisco, California
*53rd Meeting: July 5-9, 1976, at Louisville, Kentucky
*54th Meeting: June 25-29, 1978, at Dallas, Texas

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*Copies of convention proceedings or selected papers for these meetings may be purchased by writing to the Association for Education of the Visually Handicapped, 919 Walnut Street, 4th floor, Philadelphia, Pennsylvania 19107. Copies of the Indexes for 1922-1930, 1931, 1932-1940, and 1944-1960 are also available.

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NOTE: A number of articles submitted for consideration for publication in this issue of the *Selected Papers,* because of their timely nature, have been scheduled for publication in future issues of the professional journal of the Association for Education of the Visually Handicapped, *Education of the Visually Handicapped.* For information about subscriptions to this publication contact: AEVH, 919 Walnut Street, 4th Floor, Philadelphia, PA 19107.

LET'S PUT IT ALL TOGETHER: TO IMPROVE EDUCATIONAL PROGRAMS FOR VISUALLY HANDICAPPED CHILDREN AND YOUTH

Introduction

During the past few years several important projects have been underway - projects that ultimately will lead to improving the quality of educational programs for visually handicapped children and youth - projects that, to the credit of our field, have been coordinated and directed toward the common goal of program improvement. The theme of this Conference appropriately describes the current status of these projects. We are now ready to "put it all together": the teacher competency study, the guidelines, the day school guide, and the NAC residential school guide revision. The purpose of the following presentations is to put these interrelated projects together.

Of primary importance to any program is the quality of personnel, more specifically, the teacher's ability to teach. Competency-based teacher education has been talked about for a number of years. In the field of work for the blind a study was undertaken a few years ago to identify desirable and necessary competencies for teachers of the visually handicapped. The first section describes this project.

Guidelines for Preparation of Teachers for Visually Handicapped Children and Youth

Susan Jay Spungin

American Foundation for the Blind
New York, New York

Background

Perhaps the earliest formal effort to identify competencies needed by teachers of handicapped children was the study directed by Mackie for the U. S. Office of Education (Mackie, 1960). This study resulted in two publications related to the visually handicapped: *Teachers of Children Who Are Blind* (Mackie and Dunn, 1955) and *Teachers of Children Who Are Partially Sighted* (Mackie and Cohoe, 1956).

In the years that followed this study, interest in competencies for teachers of the visually handicapped was sparked by the efforts of the American Foundation for the Blind which sponsored two national work sessions, in 1958 and 1959. These sessions resulted in the publication of program objectives for a teacher education sequence and standards for college and university programs of preparation (Roberts, 1973).

The recent growing interest in competency based teacher education programs led to the completion of the most recent study in this area, *Competency Based Curriculum for Teachers of the Visually Handicapped: A National Study* (Spungin, 1977).

Procedure

From 1973 to 1975 the American Foundation for the Blind sponsored six meetings of representatives of 22 colleges and universities with professional preparation programs in the area of the visually handicapped (Spungin, 1977). After eight revisions, a field test edition of competencies for teachers resulted from these efforts. These competencies were developed under the following 12 goal areas:

Goal 1.0 Teacher will demonstrate knowledge of normal and atypical development patterns in visually handicapped learners.

Goal 2.0 Teacher will demonstrate the ability to assess visually handicapped learners using a variety of informal and formal procedures.

Goal 3.0 Teacher will demonstrate the ability to select, design and/or modify specialized curricula for visually handicapped learners.

Goal 4.0 Teacher will demonstrate proficiency in the operation of media and devices necessary for the education of the visually handicapped learners.

Goal 5.0 Teacher will utilize instructional strategies to facilitate learning in visually handicapped children.

Goal 6.0 Teacher can effectively utilize instructional materials, media, devices, aids, etc., appropriate to the individual needs of visually handicapped children.

Goal 7.0 Teacher will demonstrate ability to identify and provide appropriate counseling and guidance services to visually handicapped learners, and significant others.

Goal 8.0 Teacher will demonstrate ability to utilize local, state and national resources to assist in the delivery of services to the visually handicapped learner.

Goal 9.0 Teacher will demonstrate knowledge of and opportunity for research with visually handicapped learners.

Goal 10.0 Teacher will accept responsibilities of being a member of the teaching profession and will make a commitment to improve services for visually handicapped learners.

Goal 11.0 Teacher will demonstrate ability to administer and/or supervise programs for visually handicapped learners, including ancillary personnel, para-professionals, and volunteers.

Goal 12.0 Teacher can demonstrate the ability to evaluate both instructional sequences and overall program effectiveness of various school programs and agencies serving visually handicapped learners.

The next part of the study involved field testing. Teachers were asked to respond to each competency on a 5-point scale whether they agreed or disagreed. They were also asked to define their roles and functions and to estimate the percentage of time spent in various activities. Responses were received from 807 persons, for a 41 percent response rate (Spungin, 1977).

For purposes of data analysis, the competencies were grouped as follows: assessment and evaluation, educational and supervision, media and technology, school-community relations and research. While variations appeared among teachers by role and proportion of time spent on various school-related activities, there was sufficient agreement with the competencies to warrant further study. An example of the competencies and format can be seen in the following:

> *Teacher will Demonstrate Knowledge of Normal and Atypical Developmental Patterns in Visually Handicapped Learners.*

Entry Level of Competency:

Can demonstrate knowledge of normal growth and development from birth to adulthood.

Can demonstrate knowledge of atypical patterns of growth and development.

KNOWLEDGE	SKILL	ACHIEVEMENT INDICATORS
The teacher has:	The teacher can:	Proficiency is demonstrated when the teacher can:
1.1 Knowledge of the effects of visual handicaps on affective, psychomotor, and cognitive development.	1.1.1 Identify the impact on development of congenital total blindness, congenital low vision, acquired visual loss, etc.	1.1.1.1 Present orally and in writing examinations and tests as well as analyses of case studies.

Happily, the research portion of this study is completed and the publication is now available from the American Foundation for the Blind. One suggested area for future research was that this study should serve as the base for future assessment of teachers in order to provide direction for teacher preparation programs. Hopefully this study provides a good beginning; teachers in the field must now take the next step.

This document, while it may be idealistic in the number of competencies and the expectation that teachers should possess most or all of them, should nevertheless be viewed as providing an ideal. One next step should be the development of criteria for pre- and in-service teachers to assess the knowledge and skills they possess. This would entail adding specifics to the achievement indicators so that objective evidence of the competency could be obtained. Further, the document should be of value to supervisors and administrators in the field who are pressured to accept personnel who do not meet certification standards and are expected to serve handicapped pupils for whom they have no training.

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Program evaluation is mandated as part of PL 94-142. Effective program evaluation requires: 1) some consensus on the criteria necessary for assessing the quality of a program and 2) a mechanism for individual programs to measure their service activities against these criteria.

Standards for residential schools have been in existence since 1966 with the publication of the COMSTAC Report. Similar standards or guidelines are needed for day programs. The following section discusses a forthcoming publication from the American Foundation for the Blind which will provide guidelines for administration of day programs. You will note that these are called "guidelines" rather than "standards" because the latter term implies a degree of consensus arrived at through informal and formal input from practitioners. Such input will be forthcoming.

Guidelines for Public School Programs

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Background

We have for too long represented to the world that the blind need special treatment while at the same time asking the sighted population to treat the blind without unusual or other-than-normal attitudes. This seemingly opposing attitudinal structure has created across the nation a crisis situation in the development of special education program planning for our school-age visually handicapped youngsters.

Community public day school programs for the visually impaired have grown rapidly during the last forty years over the entire nation. In many cases, their development has been the result of a long, careful planning process by educators of visually impaired children. Other programs have evolved because of the expressed desires of individual parents to keep their children at home. Presently, the pattern is such that in each area the programs operate in a unique fashion depending upon geography, population, administrative policy, and the teacher's own perception of his or her role.

With state and federal mandates such as Federal Public Law 94-142, the Education for All Handicapped Children Act, children are being identified, assessed and, hopefully, appropriately programmed for in the least restrictive environment. The public school has responsibility in the determination of the basic philosophy it holds with regard to children with special needs. This philosophy should be based on the premise that these children are *first* of all children with the same basic needs as all other children. Furthermore, their potential as productive and accepted members of society is not only great but is the school's responsibility to release. Within such a framework the public school must also realistically diagnose and understand the special needs occasioned by visual handicaps and attempt to serve these efficiently.

The education of blind with sighted children in public day school programs is predicated upon the basic philosophy that all children have a right to remain with their families and in their communities during the course of their education; that a visually handicapped child has a right to be counted as one of the children of the family and of the community; and that both the family and the community have an obligation to provide for the blind child, as a minimum, the equivalent of what he might have had if sighted.

A variety of organizational patterns or plans is often necessary for developing a complete educational program for visually handicapped children and procedures should be established to assure that each child will be placed in or transferred to the particular plan best suited to his needs at any given time. Organizational plans most frequently provided for these children are residential schools, special classes, resource rooms, itinerant teachers and teacher consultants.

It is important to note that, when listing the various organizational patterns of educational programs serving the visually handicapped, residential schools are clearly among the alternatives available. Two phrases in the Education of All Handicapped Children Act require placement procedures for each visually handicapped child to consider all programming variations and select the one individually suited to his needs. The two phrases to which I refer are *least restrictive* environment and *free appropriate public education.* No one person should be so naive as to think least restrictive environment simply means placement in a community public school program; if one meets the requirements implied in the phrase *free appropriate public education*, the public school program without the appropriate support services and special educational personnel could be considered the most restricted educational environment for the child.

At no time should different educational program services available to the visually handicapped child be viewed in isolation or as an either/or proposition. All programmatic patterns must be considered feasible at various times in a child's development, and the spectrum of educational alternatives should be treated as a continuum of educational programmatic considerations. In order to demonstrate that special education is a part of all education and to reduce the all-too-frequently existing dichotomy between programs, the special education teacher must play a fluid role, sometimes acting as leader but at all times being ready to play the supportive role in helping the team and the regular classroom teacher meet the needs of the child. It is the very role of the teacher of the visually handicapped that is in a period of transition and holds for the future a potentially critical period in teacher preparation programs, state teacher certification requirements, and emerging program models. The professional verbiage of the day espouses generic service systems supposedly to minimize duplication of programming for all exceptional children. Would that the term, "generic programming," for our handicapped soon become a process in special education to be wisely applied.

However, far too often we are finding the bases for generic programmatic approach economically devised rather than educationally sound. An example of the problems this approach creates can be found when looking at some state teacher certification procedures in special education. At present, in some states, one finds that certification to teach the visually handicapped is part of an overall credential to teach the physically handicapped. This trend to more broadly defined procedures for awarding credentials deserves close scrutiny to ensure that the special skills that are essential for teaching the visually handicapped school-age population do not become lost, or glossed over as being nice but not necessary.

The very early history of integration or mainstreaming in the field of special education for the visually handicapped had to over-emphasize the blind child's similarities rather than differences in order for public school personnel to accept a blind child within their school systems. As understandable as this approach is, it no longer serves us well. Educators of the visually handicapped, as well as some visually handicapped children themselves, have done such an excellent job of selling the idea of integration that the need for special professional expertise, as well as the special needs of the visually handicapped population, has become blurred and, in some cases, totally ignored. It is time the profession steps back and articulates the differences that are unique to the visually handicapped child and the special professional and administrative supports required in order to actually realize the letter of PL 94-142 demanding appropriate educational programming.

Development of the Guidelines

PL 94-142, the Education of All Handicapped Children Act, will require that guidelines be established for the operation of programs and services to all handicapped pupils. During a 1976 meeting at the American Printing House for the Blind in Louisville, a group of concerned educators of the visually handicapped met to discuss ways in which such guidelines could be developed that would be useful in monitoring whether programs were meeting the intent of this legislation.

The meeting in Louisville stimulated the planning of a workshop which was held in St. Louis on March 21-25, 1977, under the sponsorship of the American Foundation for the Blind. Prior to this workshop, materials were gathered from various states that had existing guidelines for public school programs serving the visually handicapped. Fourteen professional educators in the field worked in three groups and prepared draft documents covering the following areas:

1. Administration, including legislation, funding, identification and assessment of the target population, program design and personnel

2. Program, including organization, continuum of services, early childhood, assessment, and teacher responsibilities

3. Program Supports, including physical facilities, materials and equipment, ancillary services and national/state/local resources

The products of the three groups were then combined into a draft document which was circulated to the participants for review and revision.

The document, with a preface written by Dr. Edwin Martin, is scheduled for publication, as a Practice Series Report, in August by the American Foundation for the Blind and will be available at a cost of $2.00 each.

The document, which has been reviewed by professionals, will be of value to directors and supervisors in order to provide them with objective guidelines so that program quality cannot be eroded by interpretation of "least restrictive environment" as a regular class without necessary instruction in specialized areas or teaching by those not certified in the area of the visually handicapped.

These national efforts of the American Foundation for the Blind are only a beginning in addressing the many problems and issues concerning mainstreaming. Now more than ever before we need strong advocates fighting for programs specific to the needs of the visually handicapped population. Unless we make visible the special needs of these children they will continue, in ever-increasing numbers, to fall through the special educational cracks of the developing generic program models.

> Since the publication of the residential school *Guide* there has been increasing interest in having a similar instrument for use in day school programs for visually handicapped pupils. The following section describes the background and development of a self-study and evaluation guide for day programs for the visually handicapped.

Self-Study and Evaluation Guide for Day Programs for Visually Handicapped Pupils: A Guide for Program Improvement*

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Introduction

In 1975 the Standards Committee of the Association for Education of the Visually Handicapped was allocated funds by the Board of Directors to review the area of standards and to select some aspect for intensive study. The Committee recognized the need for an evaluation guide for day school programs as being most critical, and took a survey to identify those instructional areas over and above the typical school curriculum necessary to provide a quality program for visually handicapped students being educated in regular schools (Papineau, 1976).

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*The study reported herein was funded in part by a grant from the National Study of School Evaluation, National Study Research Proposals, Bloomington, Indiana.

A survey form was distributed to teachers to solicit opinions regarding specialized curricular areas. Responses were received from 42 teachers employed in various school districts from the states of Wisconsin, Maryland, Texas, and Florida. On the basis of data obtained from this form, 18 curricular areas were identified.

Data from this survey were used to prepare an application for funds to develop a self-study and evaluation guide. With the grant received from the National Study of School Evaluation, a project was initiated to: 1) review the appropriateness of existing guides used in assessing regular school programs, and 2) to develop a supplement or guide to assess the specialized instructional areas.

Summary of the Project

The study was conducted in two phases carried out simultaneously with participation by 104 teachers from five states: Texas, Oregon, Wisconsin, Maryland, and Minnesota.

The purpose of Phase I was to assess the extent to which existing guides published by the National Study of School Evaluation (NSSE, 1970, 1973, 1975), which are used by some regional accrediting agencies in the evaluation of regular schools, are appropriate for day programs for visually handicapped pupils. This review tested the assumption that school programs for visually handicapped pupils should include the full range of experiences provided normal pupils.

In general, there was a high level of satisfaction with the appropriateness of these guides to assess the curricular areas offered to visually handicapped pupils as a part of the regular school program. In general, no curricular area was viewed as inappropriate.

The purpose of Phase II was to obtain information from the 104 teachers regarding the relevance of degree of vision and level of intellectual functioning for each of the 18 curricular areas identified in the earlier survey. Teachers were requested to rate each area according to its importance for pupils with useful vision and those with no useful vision and for pupils with varying levels of intellectual functioning: normal, mildly retarded, moderately retarded, and severely retarded.

The major findings were:

1. Six areas were considered as vitally important for all or almost all visually handicapped pupils regardless of degree of vision or level of intellectual functioning: daily living skills, leisure time activities, physical education, sensory awareness training, social skills, and visual efficiency training.

2. Nine curricular areas showed declining importance as the level of intellectual functioning declined: concept development, human sexuality, map reading, orientation and mobility, reference material skills, vocational training, braille, Optacon, and typing.

3. In general, teachers viewed all curricular areas as being equally useful for all pupils regardless of degree of vision. Some teachers viewed visual efficiency training as important for all regardless of how limited the vision; a few teachers viewed instruction in braille as important to pupils with useful vision.

4. There was a general pattern of introducing curricular areas later in the school years as levels of intelligence declined.

5. Abacus, braille, Optacon, and visual efficiency training were the only subjects considered to be exclusively within the purview of teachers of the visually handicapped.

6. In general, teachers indicated that instruction in the special curricular areas should begin early in the school years and continue throughout secondary school.

7. There was no evidence that any curricular area should be taught for a specified period of time; rather, each should be taught until proficiency was achieved.

Description of the Guide

With guidance from the study described above, a self-study and evaluation guide for day school programs was prepared. The open narrative format of the National Study of School Evaluation instruments (1970, 1973, 1975) was adopted. Material from these instruments and from the National Accreditation Council national review and field test drafts of *Self-Study and Evaluation Guides* (1977) was used. The guide was designed to be used independently, or as an instrument to accompany the one(s) used by a regular school applying for accreditation from one of the regional accrediting agencies, or as an instrument used by a residential school conducting as part of its total program a day school component when applying for accreditation from the National Accreditation Council.

The *Guide* consists of the following sections:

A. Instructions
B. Philosophy and Objectives
C. Program and Community Profile
D. The Plan for Learning Experiences
E. Instructional Areas Offered to All Pupils
F. Special Instructional Areas and Techniques
G. Non-academic Areas
H. Evaluation Summary

Sections B and C solicit information in their respective areas relative to philosophy and objectives, the program, nature and needs of the pupils, and characteristics of the school and community. Section D requests general information about specific offerings in the three areas covered by Sections E, F, and G; in the three sections the staff provides specific information about these areas under the headings: Introduction, Nature of the Program (Planning and Organization; Instructional Content and Activities; Instructional Staff; Facilities, Materials, and Equipment), Evaluation, and Programming for Improvement from the four preceding sections.

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NAC's Education Standards Project on Revising Self-Study and Evaluation Guides for Pre-School Services and Special Schools for the Blind and Visually Handicapped

Following publication of the COMSTAC Report, the next step was to develop appropriate instruments that could be used by residential school staff and on-site review teams to assess the extent to which the school met the standards. The resulting document, published in 1968, is the familiar fat green book. The instrument was developed under the guidance of an advisory committee chaired by Dr. Jack Birch and was field-tested in five residential schools. It was during this field test that it became evident that the population of residential schools was changing. The change to a largely multihandicapped school clientele was much more rapid than was anticipated, and the residential school guide was out of date almost from the beginning.

Revision of the *Guide*, however, was a monumental task and almost ten years elapsed before it could be undertaken. After several unsuccessful attempts to obtain outside funding for revision of the education standards, NAC decided to proceed with the project using funds from other resources. A coordinating committee was appointed by the National Accreditation Council to oversee the project. The committee, consisting of nine persons including two consumers, met in December 1976. At that meeting, four sub-committees were formed with specific responsibilities assigned to each for revising portions of the original guide:

1. Administration and other Sections
2. Curriculum
3. Supporting Services
4. Pre-School Services

A total of 25 persons served on these four sub-committees, some with overlapping membership on the coordinating committee.

The sub-committees met with the coordinating committee in January 1977 and began the task of revising the standards. In June 1977 their work was presented to the coordinating committee before field-testing.

The field-testing, conducted between September and December 1977, solicited input from two sources: organizations selected for a full field-test and the routine field review by volunteers from the field. For the full field-test review seven schools and four organizations conducting pre-school programs participated. The availability of the drafts was announced in the *Standard Bearer*, a publication of NAC, just after Labor Day. Persons involved in these two sources of input completed a *Suggestion Form* designed to transmit their ideas for improving the draft section. From both sources, 257 persons sent in 99 suggestion forms. Content from these suggestion forms was compiled by sections into a 65-page booklet.

During the spring of 1978, the sub-committees reviewed the input from the field and made their final revisions which were collated into a final draft for the review and approval of the coordinating committee in June 1978. The final step in the process is for the Commission on Standards and the Board of the National Accreditation Council to review and approve the 12 guides. They will be presented to the Commission and the Board in the fall of 1978. The titles of the guides are as follows:

B-2, School Philosophy and Profile
D-15, Preschool Services
D-16, Other Service Program
D-20, Curriculum Planning and Evaluation
D-21, Program for Multihandicapped Students
D-22, Program for K-12 Students
D-23, Program for Independent Living
D-24, Educational Resources Program
D-25, Leisure Education
D-26, Residential Living Program
D-27, Health Services
D-28, Educational Diagnostic and Counseling Services

The following sections describe procedures followed by and experiences of each sub-committee.

Administration and Other Sections

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Prior to the initiation of the Education Standards Project, NAC had subjected the five sets of standards for administration to a complete revision and field review. At the December 1976 meeting of the coordinating committee, NAC staff suggested that these standards seemed applicable to schools as well as agencies. The committee concurred and decided that they would be used during the field-test phase of the project. These sections were:

1. Function and Structure
2. Accounting for Services and Finances
3. Physical Facilities

4. Personnel Administration and Volunteer Service
5. Public Relations and Fund Raising

Subsequent use by schools involved both in this project and in the regular accreditation/reaccreditation process during this interim showed that these five sets of standards were indeed appropriate for schools.

The preparation of a statement of philosophy and objectives and of a school/community profile has always been a difficult task for both schools and agencies. Based on experiences during the past decade in working with schools and agencies on accreditation, NAC staff prepared a draft of *School Philosophy and Profile* for committee review. The committee recommended some minor changes in this streamlined version and approved it as being considerably more practical and useful for schools.

During the field-test process for the residential school guide in 1968, it was evident that some schools conducted programs which did not fit neatly into any section of the guide. A separate section, entitled *Other Service Program*, was developed to meet this need. During the interim, this section has proven useful for some schools and agencies seeking accreditation from NAC. It was therefore revised by NAC staff to be consistent with the remaining guides and was approved by the coordinating committee at its June meeting.

The final section for review by this sub-committee was *Evaluation Summary and Report*. The draft prepared by NAC staff in cooperation with the sub-committee had been used successfully in the field-tests by the seven schools. It too was approved by the sub-committee.

Curriculum

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The essential elements of the accreditation process include: 1) evaluation of the school's compliance with its own stated philosophy and objectives and the appropriateness of such philosophy and objectives to the reality of the school's educational task; 2) evaluation of *all* components of the school's program; 3) evaluation through self-study; 4) review of the evaluation by a team of outside competent professionals; and, 5) periodic reevaluation. It is important at the outset to describe the nature of the evaluations outlined above. With few exceptions the standards by which the school and the outside review team evaluate the school refer to qualitative rather than quantitative aspects of the total operation. In other words, both school staff and outside reviewers are asked to use their *best professional judgment.* While total objectivity is impossible under these circumstances, the process of pooling best judgments does result in a remarkably creative outcome in most instances. Readers who have not participated in the NAC accreditation procedure will find it helpful to see a segment from a typical page of the new draft copy of *Program for Independent Living* as follows:

( ) 4.1.4. *Role of School Staff.* Various school staff members are assigned definite and appropriate responsibilities as the primary instructors for various groupings of living skills.

( ) 4.1.4.1. Instruction is provided in good posture, graceful movement, acceptable gait, dancing, body gestures and facial expressions (check the primary instructors for these skills):

___ Living skills specialist

___ Physical education instructor

___ Orientation and mobility staff

___ Classroom teachers

___ Leisure education staff

___ Residence staff

___ Other (specify)

Comments:

During the school's self-study, committees are appointed to study and evaluate all components of the program. As you can see from a quick review of standard *4.1.4., Role of School Staff*, such a committee could easily become involved in discussion, even debate, of ideas and operations never before covered and become acquainted with intra-school activities and personnel in a new context. Picture, then, various committees covering perhaps 15 to 20 other components and you may see something like a beehive in midsummer. A frequent comment from schools, when the self-study is completed, is: "It was hectic but we learned a lot about our school." When the outside team receives the self-study, its members begin formulating questions and scheduling observations which will help to determine whether the school's own judgments appear to be consistent with philosophy and practice.

The sub-committee which developed standards for curriculum was assigned four major topics: 1) *Program for K-12 Students*; 2) *Program for Multihandicapped Students*; 3) *Program for Independent Living*; and 4) *Curriculum Planning and Evaluation*. This last topic is encompassed in a booklet which is designed to cover the *process* used by the school to ensure meaningful curriculum development, implementation, evaluation, and improvement.

We defined curriculum as:

> all of the guided learning experiences which are provided by the school. The curriculum includes programs of studies; activities which supplement classroom instruction; recreational activities and all other experiences for the students which are under the direction of school personnel. The curriculum is structured to develop knowledge, skills and attitudes which prepare students to live in our complex society.

The guidelines for the *Program for K-12 Students* include standards for Planning and Organization; Personnel; Communication; Community and Career Education; Creative Arts; Home and Industrial Arts; Mathematics and Science; Physical Education; Study Skills; Work Experience Program; and Program Evaluation. The guidelines specifically state that while many students will enter and remain in the K-12 program, others may engage in selected classes or activities and at the same time participate in the school's special programs for the severely, moderately, or multiply handicapped.

The guidelines for the *Program for Multihandicapped Students* cover a broad range of developmental tasks. They are designed for use with each special program for moderately and severely handicapped students, with emphasis on those handicaps which significantly delay or alter rates and modes of learning. The development of this booklet is a significant new addition to NAC's standards.

The guidelines for the *Program for Independent Living* encompass the components usually associated with orientation and mobility *and* daily living skills. Among the standards are many which relate to the integration of these two curricular areas into all other aspects of the school's student programs and activities. The standards specify that the independent living program should be structured to serve students of all ability and functioning levels and all ranges of visual loss.

As indicated above, the guidelines for *Curriculum Planning and Evaluation* were designed to relate to the process used by the school to ensure on-going curriculum improvement. Thus the committee which is assigned to this area of self-study will review the above-mentioned curricular topics as well as several of those developed by other sub-committees as indicated in reports which follow.

Supporting Services

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Usually when closure is obtained on a project or committee report, a sense of relief and, hopefully, satisfaction is enjoyed by those responsible. With the Standards for Other Services of Special Schools Sub-committee, the response is certainly relief, definitely satisfaction and also excitement. You might question how one can become excited about standards. The answer is because the Self-Study and Evaluation Guides represent the quality requested and needed by professionals, paraprofessionals, and consumers in the field.

The "other" services covered by our sub-committee are Educational Resources; Leisure Education; Residential Living; Health; and Educational and Diagnostic Counseling Services. Each of the sections is important enough by itself to be used separately or in conjunction with the other sections; each is cross-referenced with similar items in the other sections; each section provides for the needs of the multihandicapped students; and, each section responds to the need for multidisciplinary involvement in the development and evaluation of individualized educational programs.

The *Educational Resources* section represents a closely integrated relationship combining the media center concept with the traditional school library and the curricular programs. The key to meaningful integration is a designated staff member to coordinate the four basic services relevant to instructional media, methods, and equipment for staff and students. These are: textbook and instructional materials and services; library services; equipment services; and training and consultative services. The coordinator should use the standards to maximize the relationship between human and material resources both within and outside of the school to implement the total curriculum of the school.

The educational resources section is designed to recognize the alternative approaches which may better serve some individual school requirements due to factors such as varying enrollment figures. However, any alternative which means a reduction in the listed standards will likely result in diminished learning opportunities for students.

The *Leisure Education* section is completely new and involves much more than the recreation and student government types of activities within the original NAC standards. A coordinator should not only develop the basic leisure education program for after school hours and on weekends but also monitor various other instructional programs of the school for a developmental approach and consistency to the overall purpose of the program. This section received many supportive and encouraging comments during the field testing.

The section *Residential Living* is also a positive response to numerous requests from the field that specific standards be available for other than school day responsibilities of the residential school. The basic residential living program which is a vital component of the total educational system includes opportunities for independent living on and off campus; food and health related services; leisure education; transportation; and off-campus experiences. This section also incorporates the contributions of the residential living program to the individualized education program for each child.

The *Health Services* section includes the following services which can be provided directly by the school or through special arrangements with health facilities near the school or in the student's home community: evaluation; emergency care; routine medical services; vision; hearing; dental; health; counseling; and the prevention and control of communicable diseases. The facilities and equipment, as well as the security and control of all supplies and drugs, are also evaluated. The specific health needs of each student and pertinent information from the health services is also incorporated into the individualized educational program.

The final section of the "other services" available is the *Educational and Diagnostic and Counseling Services*. Due to the multiteam approach to developing and evaluating the individualized education programs of the students, this section is of vital importance to all of the other Self-Study and Evaluation Guides. The organization and composition of the diagnostic and counseling services is covered, as well as material, equipment, and facilities. The central school records and follow-up services are also included in this section with provisions for the extension of service to local education agencies.

The Sub-committee for Standards for Other Services of Special Schools greatly appreciated the invaluable assistance provided by scores of people throughout the country during the field-testing. The end product, we believe, will be invaluable in meeting the needs of the students we serve.

Pre-School Services

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There were no pre-school services guidelines offered in the first National Accreditation Council (NAC) standards. Why did we include them this time?

It was felt that the time was right for inclusion of such standards. With PL 94-142 mandating services for pre-schoolers, with research showing the gains made by those who are part of such services, with the increasing numbers of programs becoming available for that age group, with the interest in pre-school education being generated across the country, and with no guidelines currently available, the time seemed right for such standards. Those who had been on recent site visits for NAC accreditation had found that the former standards were inadequate to assess such programs. There was a real need for pre-school standards, and the revisions of the NAC standards provided the opportunity to include such standards.

It was felt that the standards should begin right at the beginning, as soon after birth as possible. This would allow continuity through the pre-school years and into the school years.

However, trying to set one set of standards for the wide variety of programs seemed like an impossible task. There are not only residential programs, but also day programs within the residential schools. There are programs located at the school itself, but many facilities have itinerant programs where the teachers go into the homes of very young children. Some of these itinerant teachers work directly with the children while others work only with the parents, teaching them how to work directly with their children. Other itinerant teachers follow the visually handicapped children into community pre-schools where the children are integrated into regular programs. Thus, it was a difficult task to come up with one set of standards that would be able to meet the wide variety of programs offered by the residential schools.

Another problem considered was the large number of programs where visually handicapped children are not enrolled as part of a residential school. It is known that the majority of pre-school visually handicapped children do not attend programs in the residential schools but are in some other community setting. To take care of the many settings where visually handicapped preschoolers can be found, it was decided that the pre-school section should be a free-standing document. While many pre-school programs for such children have in the past been attached to a residential school or agency for the blind, more and more public schools are developing such programs under their own auspices. A guide is needed for all of those who are developing or already have developed such programs and are in need of evaluation criteria.

Standards for pre-schools was a particularly difficult topic to approach because of the fact that there have been very few guidelines for pre-school services in general. Most that are now available have to do with the numbers of square feet, lavatories, and play areas that are needed for each child enrolled. It was necessary to begin at the very beginning which was done by developing guidelines from that which was known and experienced by a very competent committee.

The pre-school committee was chosen for its wide variety of expertise with pre-school visually handicapped children. This group was committed to write standards in general terms so that they could fit any setting as needed. Since working with infants involves a totally different curriculum from that of older pre-schoolers, general topics were drafted for inclusion, rather than particular topics. Staffing patterns were particularly noted, for it was felt that services from a multidisciplinary team were important, and, even though that team might not be available within the setting, it must be available within the community. Numbers of staff also came into consideration. Working with one parent in a home setting is certainly a different matter than working with a number of four-year-old sighted children in a setting where one or two blind children are integrated.

There was some difficulty in determining what the pre-school standards should be titled *Pre-school* was really an inappropriate title since the children were already in some type of school program. *Pre-academic* was considered, for that would take the children up to the time they learned academic skills, the usual pre-school time period. However, the pre-academic term would also include the multihandicapped children who were beyond the pre-school age bracket, but not beyond the pre-academic level of functioning. The title *Pre-school (0-6 years)* was finally given to try to clarify the exact population.

You will notice that the pre-school guidelines have some overlap with the multihandicapped which go from 5 years up. This is to allow those completing the guidelines some leeway in filling out their forms. Some children at five or six would be considered pre-school and some might be considered multihandicapped. With the different administrative structures available in the residential schools, children could be placed in whatever program was felt to be more appropriate.

The pre-school standards are meant to be used in many ways. They can be used as a part of the regular residential accreditation process. For those programs that are free-standing, the standards can be used in conjunction with other NAC documents having to do with the administrative aspects of such a program.

The standards were field-tested and revised with the suggestions of the field-testers in mind. Undoubtedly they will need further revision, based upon changes recommended from the field, but they are a beginning. As more and more programs are developed to work with young visually handicapped children, the need for more direction to protect our children within the services offered will become evident.

> "Let's Put It All Together" very succinctly describes the intent of the foregoing papers. Through cooperative efforts, these projects attempt to "put it all together" so that visually handicapped children and youth will have better educational programs, regardless of the setting where they are receiving their education. The completion of those projects, all directed toward program improvement, has been accomplished through joint activities of our professional organizations, notably the Association for Education of the Visually Handicapped and the Division for the Visually Handicapped of the Council for Exceptional Children; through our professional agencies, particularly the American Foundation for the Blind and the National Accreditation Council; and through all of us in the field working together: school and agency personnel; teacher educators; residential and day school teachers, supportive personnel and administrators; and, most importantly, parents and consumers of services. Truly, these are landmark projects for their emphasis on cooperation and soliciting input from the field.

MAINSTREAMING VISUALLY IMPAIRED CHILDREN IN VIGOROUS PHYSICAL EDUCATION

Charles Buell

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Introduction

Mainstreaming means the integration of visually impaired children into all courses which are feasible for them in the public schools of our country. In New Jersey blind children are included in vigorous physical education programs throughout the state. The benefits have been great, while the cost has been very little. School districts scattered throughout the country have also followed this practice. It is estimated that 5,000 visually impaired children are mainstreamed into physical education programs in public schools. On the other hand, it is estimated that at least 10,000 public school students are not being offered meaningful courses of physical education. This condition should not, and need not, exist.

Parents and educators who overprotect blind children do them harm, rather than helping them. Nearly 150 years of experience has confirmed Dr. Samuel Gridley Howe's belief that "Bumps and scratches affect only the bark, and do not injure the system like the rust of inaction." There is no evidence which indicates that visually handicapped children have more accidents than do their sighted peers. Experience has shown that only a few eye conditions can be endangered by vigorous physical activity.

Many parents and educators do not realize that visually impaired persons require higher levels of physical fitness than do their sighted peers. To attain the same goals, a blind person has to work harder and expend more energy. The only way any person can become physically fit is to participate in vigorous exercise. It is not as difficult to mainstream blind children in public school physical education as most people believe. The purpose of this paper is to describe briefly how blind students can be integrated into vigorous public school physical education programs and become physically fit.

Teaching Modifications and Class Assignment in Mainstreaming

When a visually handicapped child becomes a member of a public school physical education class, only minor changes need to be made in instruction. Some children will need more help, while others will need little or none. First, it must be remembered that at least three-fourths of legally blind persons have some useful vision. The presence of some vision usually makes the integration process easier. It will be helpful to most partially seeing children to be stationed near the instructor. For those having some useful vision, the teacher should determine by trial and error what they can and cannot see. Teachers should give clear verbal descriptions of what they expect the class to do. This will be particularly helpful to visually handicapped boys and girls. For students who are sightless, or who have very little vision, it is helpful to assign a "buddy." If the blind child does not understand the verbal description of an activity, his or her buddy can give assistance. The buddy may demonstrate the movement and let the blind child feel his/her body. Sometimes it is more helpful when the buddy moves the body parts of a sightless classmate. Notice that no additional instruction is required from the teacher. Experience has shown that buddies soon learn to give only needed assistance.

In large secondary schools totally blind boys and girls should be permitted to select units, rather than be assigned to a single class. A boy might select wrestling, weight training, and physical fitness activities, while a girl might choose dancing, swimming, or gymnastics.

The Activity Program in Mainstreaming

The activity program may be divided into activities which need no modification for visually impaired persons and activities which require minimal modification. Most blind individuals feel that the more an activity has to be modified for them to participate, the less desirable it is for mainstreaming.

Unmodified Activities

There are many activities which require little or no modification for successful participation by visually handicapped students in public school physical education classes. The teacher will find that an activity may need to be modified for one child and not for another. How much vision a child has and how well he/she uses it will be an important factor in determining whether modification of an activity is necessary.

Wrestling is an activity which requires no modification, even for a sightless boy. If a sightless wrestler wishes to start in the "touch" position, he should be permitted to do so. Each year over 400 legally blind boys compete in interscholastic and intercollegiate wrestling against sighted opponents; the visually handicapped wrestlers win more such bouts than they lose. In high school wrestling 15 to 25 boys with little or no vision place in state meets each year.

Tumbling and gymnastics are activities which require little or no modification. Some blind gymnasts have won letters in interscholastic and intercollegiate gymnastics. Many gymnastic activities do not require vision, particularly rope climbing. Visually impaired students can perform on the trampoline. Somewhat more frequent and detailed verbal instruction may be required for some students.

Runners who have as little as 1/40 normal vision can safely run alone on tracks where hurdles and other obstacles have been removed. Many legally blind boys and a few girls have won letters in interscholastic and intercollegiate track and field.

Swimming, judo, and weight-lifting are other activities which fit easily into a mainstreaming program. Dancing on the secondary level and rhythms on the elementary school level require little or no modification.

Relays in which students run in pairs are ideal for a class in which one of the members is blind. Relays run on oblong mats make it possible for blind boys and girls to identify turning points as stepping on a different surface at the end of the mat is the cue to turn.

There are a number of individual races in which blind students can participate. For example, a sack race requires no modification except possibly a whistle blown at the finish line. Races in which pairs participate are ideal. Blind and sighted students can be paired in a three-legged race.

Activities Which Usually Require Modification

Some students will not require modifications in ball games, but many will. Here are some methods which have been used successfully.

A number of legally blind boys have played on high school and college football teams. In public school physical education classes flag football is commonly played. Since vision is not required to snap the ball or block straight ahead, students with little or no vision usually play the center or guard positions.

Since many visually impaired children have some useful vision, it is desirable to obtain brightly colored balls for them to play kickball, basketball, and soccer.

In volleyball, a sightless boy or girl may serve for both teams. A sightless player might attempt free throws for both teams in basketball. In softball, a student might bat from a tee for both teams. When not batting or attempting free throws, a blind boy or girl could be performing physical fitness activities such as jumping rope, running in place, or squat jumps or squat thrusts.

In kickball, a totally blind player can place the ball on home plate, kick it, and run bases with a sighted teammate. On defense, sightless players can serve as pitchers. They roll the ball toward the sound of the clapping hands of the batter.

For a sightless boy or girl, running may be somewhat more difficult, but certainly not impossible. He/she may touch or hold the elbow of a sighted partner in distances of more than 50 or 60 yards. Using this method, totally blind Harry Cordellos finished the Boston Marathon ahead of 1000 runners who had normal vision.

For sprints of 50 yards or so, it is best to have two students hold a sash rope about as high as the hips. The sightless runner lightly touches the rope to gain direction. Endurance can be gained by running back and forth using the sash rope as a guide.

Conclusion

It is feasible to include visually handicapped students in public school physical education programs. Those educators who are not doing so should base their attitudes toward blindness on fact, rather than on supposition and emotion. When blindness is more generally understood, thousands of blind students who are now on the sidelines will be participating in physical education in the public schools.

CAN THE SIGHTED TEACH OR ADJUST TO THE BLIND?

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How many times have you heard a phrase similar to: "How rewarding your job must be?" The public praises us for our dedication because we work with the most dreaded handicap, blindness. Some of them even forget we get paid for our work.

Many blind adults lobby for only the blind teaching the blind, or for the blind making decisions for the blind. I do not want to stir up a controversy, but that is as ridiculous as saying a Tennessee Hillbilly like me cannot teach students from New York. But wait, somewhere during their lifetime this philosophy was formed. Did sighted adults, teachers, and social workers lead the blind to believe that they could not teach them? This may be somewhat true, but I do not for one minute believe that the sighted picture the blind as all Mr. Magoos.

I have been teaching the blind for almost a quarter of a century and still have doubts at times as to how well I understand or have adjusted to the blind. You may say, "If you can't adjust to blindness, why are you still in the area of education of the blind?" I do not believe anyone can really adjust to blindness whether the person is blind or sighted. A rash statement? Yes, but I believe if you are blind you learn to tolerate it, and, if you are sighted, you learn to work with it. A young man who went totally blind at the age of seven recently wrote on a college application the following statement concerning his blindness:

> I was kind of a tough kid for seven years of age, a fighter, hard nosed. But when I discovered I was totally blind, I was the most frightened thing in a world I no longer knew and I know now, full of self-pity. Why me? I made it hell for everyone around who [could] see. Adjustment didn't come quick and it didn't come easy. One year later I was introduced to

> wrestling. This was a turning point in my life. There have been other turning points in my life, like when I decided life was more than just demonstrating my physical abilities and I turned to the academics and learned to control my temper As I look from this senior vantage point at those troubled, angry, rewarding years, I realize my school created a miracle. They took me out of blindness, they helped me dream new dreams, and I gained a new reality. A total adjustment to blindness? I'm not sure that a complete adjustment would be a good thing for me - or that one life is time enough.

Everytime I see a blind person I observe how they travel and if they have blindisms. If they are in a restaurant, I observe how they eat. Don't you? When I first started teaching the blind, I really hadn't thought too much about blindness except that I thought it was the greatest handicap. But I was young and energetic and dedicated to the philosophy that I wouldn't treat blind kids any differently because they were blind. As it turned out, my philosophy had many holes in it. I found myself talking mostly to the partially seeing students, and I really felt uncomfortable talking to the blind unless they were small kids. I think I have changed since then.

Blindness affects me in different ways according to my involvement with a particular child. I still have problems emotionally when a child I know, who had sight, goes blind. A couple years ago a child I had known since birth lost all of his vision at the age of three. He was, and is, a special child to me and this was one of the saddest days of my life. Two internationally known pediatric ophthalmologists I know have difficulty talking about partially seeing patients who lose their vision. I'm sure all of you have known a lot of sadness in working with the blind.

Is this a field the sentimentalist should avoid? We have heard the cry many times, "Don't pity the blind," but is compassion pity? I can definitely say no; and, if you don't have compassion, you shouldn't be teaching, period!

Yes, we, the sighted, see the blind differently. It is difficult for us to see their needs and their frustrations. The blind ask for equality, but want to be included with the disabled in collecting Supplemental Security Income. Some blind adults write and talk of independence, but let a sighted guide lead them around. The sighted put on a sleep shade and "play blind." Can we ever adjust to each other's world? I hope so, but if we are to be effective with the blind, we must help change the attitudes of the public toward them.

Hector Chevigny, describing the onset of his blindness in the middle of this century, writes:

> Toward the blind the world presents a face it turns to no other group on earth. Everyone must struggle for his existence, must fight for his survival. The blind however need not want. Society, profoundly convinced of the utter helplessness of a man who has lost his sight, stands ever ready to help him, whether his need be so small a thing as crossing the street or the larger one of food and shelter for the rest of his days.

Now let us look at the sighted teaching the blind. The teacher, whether blind or sighted, must be willing to learn on the job. There are many colleges that offer courses in the area of the blind, and I'm sure they teach effectively what they should teach, but nothing beats experience. Answer these questions to yourself: How do you feel when a blind stranger comes into a room? Do you orient your kids to your classroom each year? Are you amazed when a blind person is in a position of employment that does not fit one of the roles that you expect a blind person to play?

Last summer my family and I were on vacation on the Atlantic Ocean. I had been fishing and stopped at a small bar to have a beer. The place was almost empty; two men were shooting pool. The bar was long and I sat down at one end while the bartender was working at the other end. I waited 10 to 15 minutes and I hadn't been served, so I was ready to leave when another person came in and yelled to the bartender to give him a beer. The bartender immediately served the customer and, when he gave the change back to the customer, I realized he was blind. I then ordered and began to talk to him and found that he was the owner of the bar. Although I had observed the man working for 15 minutes, I didn't realize he was blind. Why? Because I never dreamed of a blind person being a bartender.

When we teach the blind, we must encourage them to play roles not expected of them in order to change the blind stereotypes and also to build up their self-concept.

Where should we go from here in teaching the blind? I feel that visually impaired teachers and sighted teachers must head down the same road. When we examine the awesomeness of what teachers are expected to accomplish, it is quickly recognizable that the education of children is a tremendous task. Let's face it, in the regular stream of education, and in special education, parents have abdicated many responsibilities to the school. The ensuing result is that many schools are de-emphasizing the basic fundamentals of education. We must not let this happen.

We must be adequately staffed if we are going to be all things to all kids. Just think of the tasks that we are undertaking in schools today. We begin with the parent-educator teaching the parent how to feed the child, how to toilet-train the child, what toys to purchase, and how to select a nursery school. Social workers attempt to save marriages. Residential and day schools both want to educate the child. We must provide an opportunity for teaching the basic subjects. Braille is still "in" for the blind and, although the Optacon is a useful tool, the blind child must still have a strong background in reading.

In math, no matter what tool we use to teach, we must work hard at it and believe in it. We've run the gamut in math. I first started teaching math on a Taylor slate; of course Texans had their own, the Texas slate. Then the braillewriter became the tool and Abraham Nemeth gave us the code. Then we found we were still not doing the job and down the road came salvation, the Schott Method. Teachers were taught how to use the method, but the method soon died because it was not doing the job.

Then from across the Pacific came the abacus. Another tool that was sure to save the blind from ignorance in mathematics. This has been widely accepted, but some of us got off the merry-go-round after Schott and have stayed with the braillewriter. We all have worried too much about the tool to use. We must believe in the method we use, and most of all, we must believe the blind can learn math. It may take more instruction, but that's one of the reasons we only have 6 to 8 students at a time.

As sighted teachers, teaching English and composition, do you mark and count off for braille errors? Probably you do. But I'll bet most of you social studies and science teachers accept braille errors. Are you really teaching children if you accept errors? Yes, but you are teaching them that you don't expect as much from them as from the sighted.

Teaching the academics and integrating the visually handicapped child into the regular classroom is easy. If visually handicapped children are going to be accepted, they must learn to socialize. The acceptance by peers is the greatest need of any child, or any adult. The teacher must attempt to treat the blind child the same as any other child in the classroom. In school we find it much easier to give errands to sighted or partially seeing students. Blind students must be given responsibilities besides writing a theme on the braillewriter, working math on an abacus, or memorizing the 50 states and capitals. They need to build up their egos and self-esteem. They must be encouraged to participate in different types of activities that enhance their pride. This is easy in a residential school but is much more difficult in the mainstream; yet, it can be done. Students should be encouraged at an early age to participate in scouts, swimming, bowling, 4-H, and other group activities. As they get older, they can participate in all types of athletics, forensics, band, student government, plays, and the like. To get children into activities takes not only a simple suggestion, but also a dedicated effort by all teachers, social workers, houseparents, and parents. It is very easy for someone to take the easy way out, to let a blind child sit at home or in a dorm with a transistor radio to his or her ear fantasizing about becoming a disc jockey. It is easy to let the child sit and verbalize on all the activities of the world, never becoming a part of them. We must work to keep students from being confined to a restrictive environment. A child can be in a restrictive environment in a residential school, in a resource room, mainstreamed, or in his or her home - no matter how HEW or State Departments of Education define "least restrictive."

In addition to participation, children must be encouraged to compete, and I mean *compete*. When a visually handicapped youngster runs a 2-mile cross country race in 13 minutes and the winner runs it in 10 minutes, when high school students compete against sighted junior high students in athletics or music competition, this is not competition, but token participation. Athletic activities in schools for the blind have been the savior of many visually handicapped youngsters. They have not only provided an outlet for anger and frustrations, but also have helped give self-confidence in one area, the physical, in which blind people are considered by the public to be seriously handicapped. If people are successful in roles that are not expected of them and gain recognition, that recognition helps build up their egos which probably have been deflated many times. It is very easy for sighted educators with doctorates to lobby in Congress for legislation for the blind - such as the right to place all blind children in the mainstream. But, many of these lobbyists have never worked down in the trenches, the classroom; many have never seen the happy face of a sweaty young blind man who has beaten his sighted opponent on the wrestling mat, or the tossled hair and the excitement of an albino girl who has just won the 75-yard dash.

As I look out over the horizon, I see residential and day school teachers, both sighted and blind, working together in harmony for the good of the child. We must work together and recognize that each child has different needs. Public laws will not change the needs of the child. You can't legislate education.

In closing, I would like for all of you to look at the products of our educational systems. Are they adults that we are proud of? I don't know about you, but I am proud of most of the students I have been associated with and know where more than 50% of them are today. They are the lawyers, the teachers, meat cutters, computer operators, and medical transcriptionists, that came to school from the broken home, from the dirt floor, from the drunken father, from the overprotective mother, and from an overindulgent society. Yes, I believe the sighted can teach the blind if they will only hold their proper perspective. Completely adjust to blindness? No, one lifetime is not enough.

PUBLIC LAW 94-142: ONE YEAR LATER

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It is a privilege for me to have an opportunity to discuss the implications and impact of PL 94-142 on the education and training of visually impaired children and young adults. I suppose that the above is an appropriate title, although, since I am an administrator of a residential program for visually impaired children, the topic could as well be "Reshaping the Role of the Residential School," or any other description which would describe appropriately the extensive changes in delivering educational services to visually impaired boys and girls. As an introduction, I would like to call your attention to the following quote which many of you will pleasantly recall from Louis Carroll's *Alice in Wonderland*:

> "Will you tell me, please, which way I ought to go from here?" said Alice. "That depends a good deal on where you want to go" said the Cat. "I don't much care where" said Alice. "Then it doesn't matter which way you go" said the Cat.

Just like Alice in Wonderland, many of us in residential school administration have been confused and confounded about which way to go since the advent of PL 94-142. Unlike Alice, most of us care very much where we are going! Let's discuss for a moment the new and revised role that the residential school can play in the teaching-learning process for exceptional children. Perhaps the most important question you ask is "Are state residential schools for the blind adequate systems to provide educational opportunities for visually impaired children?" Even though I may be accused of discussing the age-old residential school versus placement in the local educational agency concept, I believe a careful study of the issues will indicate that it is not a question of the continuing existence of the residential school program, but what population can be served most appropriately in a residential facility.

The rules and regulations of PL 94-142 call for certain basic steps relative to the education of exceptional children. First, a current educational evaluation is completed for each individual of school age. Based upon this evaluation, an IEP is developed which lists short- and long-term goals and objectives, plus all educational and support services required. Then, a Placement Committee, made up of the parents, teachers, administrators, the student (when appropriate), and support services personnel, conducts a staffing to discern in what program a particular child could be served best.

Let us emphasize those steps again for the sake of clarity:

Identification Procedures

1. The psychoeducational evaluation
2. Development of the IEP
3. The Placement Committee meeting
4. The implementation of the IEP

In addition to these steps, an annual review must be conducted to insure that appropriate progress is being made and to insure that the placement has been most appropriate and has been made in the least restrictive environment.

Let's look at the idea of "least restrictive environment." I suppose that no other phrase has given educators more difficulty than this in quite some time. On second thought, maybe our educational jargon is intended to confuse! What is the least restrictive environment for one exceptional child is a very appropriate environment for others. The "least restrictive environment" is actually what is least restrictive for the individual child in question. It is not my intent to preserve the residential school as a place where all visually impaired children could be educated. To the contrary, it is my opinion that children who can be served best in a local educational association remain at home with the care and concern of parents. There are, however, numbers of children from small communities where local educational systems cannot be expected to provide the services needed to educate visually impaired children. At the Georgia Academy for the Blind, we applaud the mandate of PL 94-142 and have not taken a self-preservationist attitude toward retaining students who can be served in regular classrooms with their sighted peers. We do, however, take issue with the quality of many programs which have been established hurriedly and do not appear to offer adequate programming for blind children.

In the PL 94-142 regulations, reference is made to "appropriate education." To me, an appropriate education is at least all of the following services: traditional elementary and secondary academic subjects; vocational education specific to the needs of persons with limited vision; braille reading and writing; orientation and mobility; career education for the visually impaired; counseling by qualified individuals who particularly understand the ability of the person who is visually impaired and who have overcome the constant sense of paternalism which shelters those who do not need protection; daily living skills; physical and occupational therapy; adaptive physical education; and low vision services training. For multihandicapped children, appropriate education would also include the development of self-help skills and language development. In summary, an appropriate education appears to be a list of needs documented from the psychoeducational evaluation.

The PL 94-142 regulations indicate a continuum of services. It is my understanding that a continuum is a list of resources which go from most to least desirable. I believe a continuum of educational services is inappropriate when one is trying to decide on an individual basis what is most appropriate for a particular child. During the PL 94-142 hearings in Georgia, I took the opportunity, along with other special educators, to register the complaint that offering a continuum of services would be counterproductive to examining each individual case and selecting the least restrictive environment along with the most appropriate educational services. Although I have great respect for Dr. Maynard Reynolds and his work with the Council for Exceptional Children, I doubt that educational services can be rank-ordered like Maslow's Hierarchy of Needs. I suggest that we list all the types of services which should be available to visually impaired children in circular fashion and think of the child in the middle.

Let's consider for a moment parental involvement in the due process procedures instigated under PL 94-142. For the first time in my short twelve years of being associated with programs for exceptional children, the responsibility for the education of children has been placed equally on the shoulders of those of us in education and with parents. This is evidenced by signatures required for evaluation, for participation in the Placement Committee meetings, and for the involvement required of parents in the development of the IEP. In order to help parents understand the needs of visually impaired children, the Georgia Academy has established workshops which deal with parent rights and responsibilities. Initially we approached parent participation with some trepidation. We were not at all sure of our responsibility as an intermediate educational association, nor were we sure of the responsibility that we had to the local system. We discovered very quickly at statewide special education meetings that local educational association members were eager to know how we might serve as a resource program and how we might be able to provide adjunctive services to visually impaired children enrolled in the public schools. As a matter of fact, PL 94-142 has developed a very positive communication system between all of the school systems in the State of Georgia and the Academy for the Blind. Perhaps many of you have had similar experiences. In conjunction with the State Department of Education, we have developed a statewide workshop to provide staff development and inservice training for teachers of the blind from public schools.

Although our school was not monitored during the 1977-78 school term, I did have an opportunity to work with Dr. Tom McCurran of Georgia State University and Humanics Associates who were charged with the responsibility of monitoring State schools for compliance with the Education for All the Handicapped Law. Persons who would like to have a copy of this document may obtain it by writing to me at Georgia Academy for the Blind, 2895 Vineville Ave., Macon, GA 31204. I think you would find it of some assistance to see how responsibilities are assigned among the local, state, and intermediate educational associations.

I have had an opportunity to read the "for and against PL 94-142" literature in the journals of AEVH, CEC, and NEA. It is my feeling that PL 94-142 means particularly good things for visually impaired children. I believe that 94-142 has opened doors for educational opportunities within the mainstream of public education in this country that have heretofore been closed. I understand that there are those of us who would support the repeal of 94-142. I am not one of those educators!! I believe that 94-142 is a long overdue Civil Rights Bill for school-age handicapped children throughout the country. My friends in regular education have been very concerned with the comment "Special education today, regular education tomorrow." The implementation and the interface of special and regular education is a difficult process which requires extensive renovation of the existing curricula and programs to which we have all become accustomed. I recognize that the job of teachers throughout the past school year has, perhaps, been more difficult than any other year in the history of programs for exceptional children. My own sense of empathy for teachers is reinforced by my frustration as an administrator in trying to understand the law, the implementation, and the due process procedures. I would like to call your attention to the National Advisory Committee on the Handicapped 1977 Annual Report. There is in this document a comprehensive description of the IEP process which is a most important key to establishing appropriate education experiences.

Alice in Wonderland is a wonderful story which conjures up childhood thoughts of where to go and how to get there. Perhaps we have all been like Alice in not knowing where we wanted to go and, therefore, not knowing how to reach a particular destination. It is my opinion that PL 94-142 has given us the direction to follow in establishing a free and appropriate education for each handicapped child. Let's continue to enjoy the story of *Alice in Wonderland*, but let's modify Alice's behavior just a bit. Wouldn't it be nice to hear:

> "I care very much where I am going. I care very much about how I will get there and, more importantly, I care very much about those who I will influence on my way."

SAVI (SCIENCE ACTIVITIES FOR THE VISUALLY IMPAIRED): DEVELOPING A NEW SCIENCE CURRICULUM

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SAVI (Science Activities for the Visually Impaired) is a series of science-based activities that bring hands-on experiences to visually impaired and multiply handicapped children. SAVI activities are now being field-tested in residential schools, special classrooms, resource rooms, itinerant programs, and ordinary classrooms on a national basis. It is planned that over the next calendar year development of the SAVI activities will be completed, to be followed by publication and dissemination.

The developers of SAVI are based at the Lawrence Hall of Science at the University of California in Berkeley. The Lawrence Hall is a science education center that has been a leader for many years in the movement of science education from textbook-centered learning towards interactive involvement with multi-sensory materials. In elementary science education, the Lawrence Hall is well known as the developer of SCIS (Science Curriculum Improvement Study), a widely used elementary science curriculum, which teachers of the visually impaired are familiar with through its adaptation as ASMB (Adapted Science Materials for the Blind). SAVI, however, is not an adaptation of a general science curriculum; rather, it is a new curriculum being developed specifically to meet the needs of visually impaired pupils across many settings.

SAVI activities, as developed thus far, are organized into a series of nine modules. Each module addresses a particular theme or concept, such as living organisms, outdoor biology, mixtures and solutions, sounds and vibrations, measurement and mapping, the human body, and solar energy. Each module, in turn, contains a series of two to eight activities arranged in increasing complexity. These activities are designed to be used as part of the complete module, or independently, or to be adapted for special use, or even to be broken into subactivities. SAVI is aimed at children of approximately upper elementary school age, although it has been successfully used with children both older and younger.

Three major principles have guided the design of SAVI activities. First, they are extremely flexible in order to accommodate the very wide range of abilities among visually impaired students. Second, all SAVI activities actively involve students in hands-on experiences. Third, SAVI activities use simple, ordinary materials rather than specialized equipment. These principles can be illustrated by examples of SAVI in action.

For instance, in an activity called "Rafts" youngsters have experience with floating, sinking, balance and other concepts by using small wooden rafts in basins of water. The rafts tip over with a splash if enough metal washers are placed on them. Students systematically vary the thickness of the rafts and the number of washers in exploration of the materials, using simple but basic scientific processes of observation, prediction, description, measurement, and hypothesis-generation. Very young or severely impaired children can use the materials to have simple sensory-motor experiences with water and the sinking and floating properties of objects. Older children can focus on the variables that are important in predicting. Advanced or especially able students can use the same materials to record data and even to plot tables of volume versus weight to explore the mathematics of floating and displacement. And the materials are inexpensive, uncomplicated, and actively involve the student.

Besides being appropriate for use with students of varying ability levels, SAVI is flexible because it involves many subject areas besides science as such. In fact, we prefer to call the activities "science-based" rather than "science activities." For instance, in two activities, "Origin of Seeds" and "Seed-Grams," youngsters dig into fresh fruits and vegetables to hunt for seeds to observe and compare them. Pea pods or tangerine wedges can be used as sources of seeds. Students learn how to record the number of seeds per pod on histogram boards. But this activity is not limited to learning science facts. Depending on the youngster's abilities and the classroom emphasis, these activities have been used in learning daily living skills - cutting, peeling, marketing; in mathematics - averaging, predicting, graphing; in health - washing and food preparation; even in language, as children use new words and concepts to describe their investigations. Individual teachers have even used this activity as the basis for social studies work by considering the places of origin and the marketing patterns of fruits and vegetables.

These activities using seeds illustrate a second principle guiding SAVI activities. That is, the activities use familiar materials to promote a transfer of learning from the classroom to the home. When necessary, ordinary materials are supplemented by special aids. It has been found that many visually impaired children lack experience with even common objects, so that these are emphasized in the activities. It surprises some of our trial teachers to find children who have never seen an ice cube, for instance, or do not know that there are such things as seeds.

A third principle guiding the SAVI activities is that learning is facilitated when children are involved actively with multi-sensory, hands-on materials. To keep the focus of the activities on the materials and on the children's use of them, SAVI does away with a textbook. Instead, very clear, illustrated activity folios are provided to guide the teacher in arranging activities to allow for children's exploration. This active involvement is especially important for visually impaired children who often have far too few ways to manage their environment. For instance, one series of activities uses ordinary crayfish to investigate such behaviors of living organisms as feeding, reproduction, locomotion, growth, and territoriality. Crayfish are fascinating animals, able to be handled without harm to themselves or the handler, not too difficult to care for, and are so appealing that teachers have used activities with them as rewards at the end of the day or the week.

At this time SAVI activities are in the process of field-testing in varied settings ranging from residential schools to regular elementary classrooms containing a visually impaired child. Usually the activities are used from two to five times a week, with each SAVI activity occupying from one to four weeks. Eventually, the number of activities will enable teachers to plan up to approximately a three-year curricular sequence. Usually 30- to 45-minute periods are allowed for SAVI activities, although the varied nature sometimes means that an activity, such as growing seedlings through a complete life cycle, will be organized and then followed over a course of time by short observations.

While SAVI has been found to fit neatly into residential schools and special classrooms, some special modifications are needed in extending it into regular classrooms containing a visually impaired child. These modifications may include use of SAVI as independent projects, as an interest corner or as an activity table, or as a rotating small-group experience. Perhaps the most interesting use in regular classrooms has been as a whole-class activity. That is, instead of the more conventional strategy of adapting regular materials for a visually handicapped child to use in a regular classroom, this approach uses special materials for everyone, including the visually impaired child who then participates without modification. This is possible, of course, because the flexibility of the activities has meant that all of them have been fine activities for use with non-handicapped children as well as handicapped children. And the teacher benefits from this approach because he/she needs to use only one set of activities with the class rather than a regular version plus an adapted version for the handicapped.

In the "Howdy Heart" activity, simple stethoscopes are used as children observe and measure heartbeats. More advanced students can record heartbeats and compare them under varied conditions. One teacher felt that the integration of the handicapped child was enhanced by having activities that could be used without special adaptations.

Some SAVI activities have particular benefits for visually impaired children in their emphasis on the use of the senses of touch, hearing, and movement, as well as vision. In fact, a visitor to a class using SAVI might not identify the activities as science activities at all. Instead, they might appear as very good activities in sensory development, in concept development, or even in pre-mobility skills. For instance, an activity called "Drop-It" uses a simple cardboard carton and ordinary objects that are dropped and discriminated by sound. Advanced students can use word games or math games with these materials in a way that has made them interesting for students through high school. Another activity has the students making concrete models of their classrooms.

Before closing, the issues of teacher training and the future developments with SAVI should be mentioned. Appropriate teaching skills are a major element in the use of SAVI. Open, hands-on materials require a teacher to act as a facilitator, guide, and resource person rather than solely as a source of facts. Happily, most teachers of the visually impaired seem to be experts in adapting and modifying materials and in using concrete materials in classrooms. Introduction of teachers to SAVI follows the same principles. Rather than handing teachers a guide and a box of materials, activities are introduced by having the teachers use them. Not only does this method provide a good introduction to SAVI, but it functions as a strong inservice experience in curricular development and in teaching skills.

As you have seen, most of the activities do not require an esoteric or even a very extensive knowledge of science. In fact, some of the activities, such as sprouting seeds or using megaphones to collect sound, may already be in some teachers' bag of favorite projects. One of the chief merits of SAVI is that a large number of such activities will have been shown by field-testing to be effective, and they will be packaged in such a way as to make them easily usable by teachers.

In the future, it is hoped that dissemination will allow a large number of teachers to be introduced to SAVI. While the evaluation of the activities now being tested is not complete, the developers are optimistic about the eventual success and adoption of SAVI. Our trial teachers are eager to continue with the program and have been invaluable in helping us to criticize and improve it.

For those who wish additional information on SAVI, please write to the Field Coordinator for SAVI, Lawrence Hall of Science, Berkeley, CA 94720.

SUPPLIERS OF MATERIALS AND SERVICES

Listed below, in alphabetical order, are agencies and companies that have indicated that they provide materials and services to multiply and visually handicapped children. We would like to thank all of them for their contributions which have helped to cover the expenses of the 54th Biennial Conference of the Association for Education of the Visually Handicapped.

The symbol + indicates that free catalogues or informational pieces are available on request.

The letters refer to the areas in which each listed organization offers materials or services. These are:

a. Adaptive Equipment
b. Agencies/Schools/Organizations Serving the Blind and Visually Handicapped
c. Audio-Visual Aids
d. Braille Equipment and Supplies
e. Communication Devices
f. Devices for Daily Living
g. Educational Aids
h. Equipment for Motor Development
i. Low Vision Aids
j. Orientation and Mobility
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l. Publishers - General
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o. Recreation/Games/Toys
p. Sensory Development

+ American Association of Workers for the Blind — b
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Washington, DC 20005
(202) 347-1559

+ American Foundation for the Blind, Inc. — a, b, e, f, g, l, o, p
15 W. 16th Street
New York, NY 11217
(212) 924-0420

+ American Printing House for the Blind — b, c, d, g, h, i, j, k, m, n, o, p
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Louisville, KY 40206
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+ American Thermoform Corporation d
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Pico Rivera, CA 90660
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6357 Arizona Circle
Los Angeles, CA 90045
(213) 776-3343

+ Arkansas Enterprises for the Blind, Inc. b, i, j
Attn: Howard H. Hanson
2811 Fair Park Blvd.
Little Rock, AR 72204
(501) 664-7100

+ Blindness, Visual Impairment, Deaf-Blindness l
Semiannual Listing of Current Literature
Attn: Managing Editor
c/o N.I.R.S., 919 Walnut Street - Room 400
Philadelphia, PA 19107
(215) 627-3501

+ R.R. Bowker Company l, m
Attn: Iris L. Rugoff
Box 1807
Ann Arbor, MI 48106
(313) 764-2774

+ Center for Independent Living b, c, f, g,
New York Infirmary j, m, n, p
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New York, NY 10003
(212) 674-7580

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Attn: Harvey Fersten
P.O. Box 1717
Pasadena, TX 77501
(713) 477-7171

+ Duxbury Systems, Inc. d
Attn: Joseph Sullivan
123 Lowell Drive
Stow, MA 01775
(617) 897-8207

+ Elinfa Inc. d, e, g
Attn: Mr. O. Tretiakoff or Mrs. G. Snider
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Washington, DC 20006
(202) 857-0684

Encyclopaedia Britannica 1
Attn: Ann Gordon (Mrs.)
425 N. Michigan Avenue
Chicago, IL 60611
(312) 321-6903

+ Enrichment Reading Corporation of America a, c, g
Attn: James R. Aumann
Iron Ridge, WI 53035
(414) 387-4848

+ Exceptional Play, Inc. g, h, o, p
Attn: Becky Williams
P.O. Box 1015 C
Lawrence, KS 66044
(913) 842-9368

+ Hadley School for the Blind g
Attn: Student Services Coordinator
700 Elm Street
Winnetka, IL 60093
(312) 446-8111

+ Howe Press - Perkins School b, d, f, g,
Attn: Harry J. Friedman j, o
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Watertown, MA 02172
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+	International Marketing Services Attn: Robert Stevenson or Robert Martin 1442 U.S. 19 South, Suite 108-1 Clearwater, FL 33516 (813) 535-3882	b, c, f, g, i
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+	Lexicon Inc. Attn: Jack Letscher 60 Turner Street Waltham, MA 02154 (617) 891-6790	c
+	Library of Congress, Division for the Blind and Physically Handicapped Attn: Frank Kurt Cylke 1291 Taylor Street, N.W. Washington, DC 20542 (202) 882-5500	a, b, c, d, e, i, k
+	Library Reproduction Service, Div. of Microfilm Company of California, Inc. 1977 S. Los Angeles Street Los Angeles, CA 90011 (213) 749-2463	m

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20 W. 17th Street
New York, NY 10011
(212) 242-0263

+ Mechstat, Incorporated b, e, f, g, h, i, j, o, p
Attn: D. Reginald Traylor
830 N.E. Loop 410, Suite 210
San Antonio, TX 78209
(512) 828-0203

+ Mega-Diastix Specialty Systems b, i
Ames Company, Box 70
Division Miles Laboratories
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Elkhart, IN 46515
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Multimedia Division
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111 Leslie Street
Dallas, TX 75207
(214) 651-1703

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Box 3036
San Bernardino, CA 92413
(714) 864-0296

+ Noir Sunglasses - Rec. Innov. Co. i
Attn: Ms. D. Langley or Mr. D. Breece
P.O. Box 159
S. Lyon, MI 48178
(313) 769-5565

The Puzzled Company
Attn: Philip R. Einsohn
P.O. Box 5743
Austin, TX 78763
(512) 454-6244

+ Rhythms Productions — c, g, j, l,
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Whitney Bldg, Box 34485
Los Angeles, CA 90034
(213) 836-4678

+ Science for the Blind Products — a, e, f, g,
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Box 120
Bala-Cynwyd, PA 19004
(215) 664-9429

+ SCM Corporation (Smith-Corona Group) — g, h, i
Attn: Arthur P. Wales
65 Locust Avenue
New Canaan, CT 06840
(203) 972-1471

+ The Seeing Eye, Inc. — b
Attn: David Loux
Morristown, NJ 07960
(201) 539-4425

Social Security Administration — b
6401 Security Blvd.
Baltimore, MD 21235

South Dakota School for the Visually Handicapped — b, j
Attn: Jules Coté
423 17th Avenue, S.E.
Aberdeen, SD 57401
(605) 622-2580

+ Southern Microfilm Corporation — m
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Houston, TX 77018
(713) 869-0181

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(303) 571-6991

+ Step Inc. g
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(206) 355-9830

+ Telesensory Systems, Inc. a, b, d, e,
Attn: John G. Beard, W. Region Mgr. g, j, o
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Palo Alto, CA 94304
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